Designing an Ontology for Human Rights Violations Documentation

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Abstract

Around the world, human rights groups of different sizes, and often with scarce resources, collect information about human rights violations. However, developing database models according to each organisation's needs remains a challenge. One way to facilitate data modelling is to reuse patterns and other embedded knowledge from an ontology, i.e. a shared, generic data model that represents consensus about a domain. The problem addressed in this thesis is that human rights groups lack ontologies to support the modelling of case databases. The research goal of this thesis is to: Design a domain ontology for human rights documentation. The ontology, called OntoRights, was designed in two versions: Full OntoRights and Simple OntoRights, including a Manual for human rights groups on how to use Simple OntoRights for modelling case databases. The overall methodological framework was Design Science Research. A case study strategy of a human rights group that has a technology and documentation focus was implemented to explicate the problem and elicit non-functional requirements, using unstructured interviews and informed argument as methods. A survey strategy followed for eliciting functional requirements, the methods were document study of manuals and questionnaires to human rights practitioners. Thematic analysis was used for the document study. To design the artefact, the Ontology Development 101 method was applied. The strategy for demonstration and evaluation was again case study, and the methods questionnaire and semi-structured interviews. The main result is Full OntoRights that was designed as an extension of a well-founded ontology of the legal realm. For increased ease of use, Full OntoRights was converted into Simple OntoRights, and its included Manual. The evaluation suggests that OntoRights could be highly useful for modelling case databases. However, the evaluation also shows that for human rights groups without prior experience in data modelling, OntoRights may be difficult to use. A limitation of the thesis is the sampling of one of the studies used to elicit functional requirements. The thesis is original insofar that it is the first formal ontology for the human rights domain, and that it uses Information Infrastructures theory for the requirements elicitation.

Keywords: Ontology, Human Rights, Information Infrastructures (IIs), Human Rights Technology, HR-Tech, ICT4Development, OntoRights

Synopsis

Background	Around the world, human rights groups of different sizes, and often with scarce resources, collect information about human rights violations to bring justice to the victims and prevent future aggressions. While some cases only contain a single piece of information, others constitute a complex puzzle of sometimes contradicting sources, people, timelines, and legal analysis. However, developing database models according to each organisation's needs remains a challenge. One way to facilitate data modelling is to reuse patterns and other embedded knowledge from an ontology. An ontology can be described as a shared, generic data model that represents consensus about a domain.
Problem	The problem addressed in this thesis is that human rights groups lack ontologies to support the modelling of case databases. Therefore, the information they collect cannot be sufficiently leveraged.
Research Goal	The research goal of this thesis is to: Design a domain ontology for human rights documentation. The ontology, called OntoRights, will be designed in two versions: Full OntoRights and Simple OntoRights, including a Manual for human rights groups on how to use it for modelling case databases.
Method	The overall methodological framework was Design Science Research. A case study strategy of a human rights group that has a technology and documentation focus was implemented to explicate the problem and elicit non-functional requirements, using unstructured interviews and informed argument as methods. A survey strategy followed for eliciting functional requirements, the methods were document study of manuals and questionnaires to human rights practitioners. To design the artefact, the Ontology Development 101 method was applied. The strategy for demonstration and evaluation was again case study, and the methods questionnaire and semi-structured interviews.
Result	The research goal was achieved successfully. Full OntoRights was designed as an extension of a well-founded ontology of the legal realm. For increased ease of use, Full OntoRights was converted into Simple OntoRights, and its included Manual.
Discussion	A limitation is the sampling of one of the studies used to elicit functional requirements, which has too many aspects of convenience sampling. The thesis is original insofar that it is the first formal ontology for the human rights domain. The thesis and OntoRights can be used by human rights groups when designing case databases or other related applications. However, the evaluation also suggests that human rights groups with less skills in data modelling may find OntoRights difficult to use. Still, the societal consequences of OntoRights will hopefully be better respect, protection and fulfilment of human rights.

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The thesis is released under a Attribution 4.0 International (CC BY 4.0) licence.[1] The produced artefact (OntoRights) is released under the unlicense.[2] The produced datasets (for example survey results) are released under the Open Database License.[3]

The thesis was submitted for grading in June 2022. Later, a minor change was made of the acknowledgements, some additional proof-reading was done, and an annex about the research process was removed. This, final, version was published on 17 July 2022.

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AI. Artificial Intelligence

CAS. Complex Adaptive Systems

CQ. Competency Question

DOLCE. Descriptive Ontology for Linguistic and Cognitive Engineering

DSR. Design Science Research

E-OPL. Enterprise Core Ontology

gUGO. Gentle UFO

HARE. Humanitarian Aid for Refugees in Emergencies

HURIDOCS. Human Rights Information and Documentation Systems

ICC. International Criminal Court

ICCS. International Crime Classification Scheme

IHL. International Humanitarian Law

II. Information Infrastructure

LKIF. Legal Knowledge Interchange Format

OntoRights. The ontology designed in this thesis.

OWL. Web Ontology Language

RDF. Resource Description Framework

SDG. Sustainable Development Goal

SUMO. Suggested Upper Merged Ontology

TAM. Technology Acceptance Model

UFO. Unified Foundational Ontology

UML. Unified Modeling Language

UN. United Nations

UNHCR. United Nations High Commissioner for Refugees

UPR. Universal Periodic Review

W3C. World Wide Web Consortium

XML. Extensible Markup Language

1. Introduction

Around the world, human rights groups of varying sizes collect information about human rights violations to bring justice to the victims and prevent future aggressions. This work plays a significant part in making states comply with their human rights obligations (Cassese, 2012, p. 144).

> "The most fundamental thing a human rights group can do is to tell the truth. A good information management system can help them to do this by maintaining systematic control over the various pieces of human rights stories that they receive." (Ball, 1996)
> Patrick Ball, Director of Research, Human Rights Data Analysis Group (HRDAG)

The collected information is stored in repositories of very different types: from paper notebooks to advanced databases. This practice is referred to as *human rights violations documentation*. According to Dueck et al. (2001, p. 4), "documentation is the process of systematically recording the results of an investigation or fact-finding in relation to an event or number of events". While some cases only contain a single piece of information, others constitute a complex puzzle of people, timelines, legal analysis, connections with other cases, and sources. These information flows constitute socio-technical systems, as defined by Johannesson & Persjons (2014).

Managing this information is a challenging task, in particular since many human rights groups work on a shoe-string budget (Aronson & Land, 2018, p. 7) in high pressure environments (Piracés, 2018, p. 293). At some point, many of them must make the leap from text documents and spreadsheets to a structured database. Others already have a database but want to improve it. While the costs associated with these technologies are falling (Aronson & Land, 2018, p. 9), developing database models according to each organisation's needs remains a challenge.

In addition to intra-organisational information management, there is also a need for improved information exchange and aggregation of this heterogeneous information from diverse actors (Harrison et al., 2020). As Alston & Gillespie (2012, p. 1093) has shown, the current human rights system is characterised by dispersed information, a term established by Sunstein (2006).

Human rights groups work within a global human rights system. The nation-states have by ratifying different international treaties recognized their obligation to respect, protect and fulfil certain human rights, such as the right to a fair trial, right to water, or freedom from torture (*Manual on Human Rights Monitoring*, 2011). When these obligations are not honoured, this may constitute a human rights violation. In order to show that a violation has occurred, human rights groups must gather convincing evidence and make a legal argument.

Human rights violations occur in a complex social reality and human rights groups are heterogenous. Depending on their area of interest and other factors, different organisations need different data models (Dueck et al., 2001, pp. 202-207). Some organisations might be very interested in the properties of the people involved (such as gender or ethnicity), others are monitoring violations by a certain actor (such as "police watch" initiatives). Some are collecting evidence that must be strong enough for a criminal court case, others need to analyse organisational structures to show a chain of command. Within the human rights system there are also organisations that do not collect the evidence themselves but instead reuse information from other actors for specific purposes, such as presenting

emblematic cases to international bodies, for instance, the UN Human Rights Council. Finally, there are organisations that provide technological support to other organisations. One example is Geneva based HURIDOCS, which supports human rights groups to gather, organise and use information.

1.1. Problem

As described in the previous section, designing data models remains a challenge for human rights practitioners. Therefore, HURIDOCS in January 2022 published the first iteration of a Community Resource for database design[4], written for and with human rights groups who are documenting violations in their communities. A complementary approach, however, which can work as a mutual reinforcement of HURIDOCS' resource, is to focus on improved Ontology[5] within this domain.

An ontology can be described as a shared, generic model that represents consensus about a domain (Nguyen, 2011). In this thesis that domain is human rights violations documentation. Ontologies provide an abstract and shared data model, above the implementation of a concrete data system (Gruber et al., 2016). A domain ontology contains much embedded knowledge, as defined by Johannesson & Persjons (2014, p. 26), and patterns that can support the design of a specific database.

In this vein, the problem addressed in this thesis is that human rights groups lack formal ontologies to support their data modelling.

As explained by Johannesson & Perjons, (2014, p. 94) a problem worth solving should be significant, of general interest, challenging, and preferably also original.

Significant. As described above, data modelling remains a problem for many human rights groups. Inadequate models impede their fundamental mission of telling the truth (Ball, 1996).

General interest. The problem is of general interest since arguably thousands of human rights organisations around the world are affected by inadequate data models. Also, if an ontology was to become widely used, it could contribute to reducing the above-mentioned problem of dispersed information described by Alston & Gillespie (2012).

Challenging. No sufficient solution to the problem exists. The most ambitious work in this direction that this author is aware of is a data model designed by HURIDOCS two decades ago, the so-called event model (Dueck et al., 2001, p. 223/Appendix C), that is still being used to some extent. Moreover, successful ontology design is difficult even for experts (Ruy et al., 2015, p. 173). It will be a challenge to design an ontology that is sufficiently complete to cover the many dimensions of human rights violations documentation, while also being flexible enough to be useful for human rights groups of different characters.

Original. After an extensive web search, search in academic databases, and communication with human rights professionals, no formal ontologies was found for this domain.

The area within computer and systems science to which this thesis contributes is ontologies for information systems (IS), in particular applied ontology and legal ontology.

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[4] HURIDOCS' Community Recourse can be accessed at https://huridocs.org/community-resources/
[5] Like Nguyen (2011, p.1), this thesis uses capitalised "Ontology" to refer to the research field, and "ontology" to refer to specific models.

1.2. Research Goal

The research goal of this thesis is to: Design a domain ontology for human rights documentation. A primary purpose of the proposed ontology (called OntoRights) is to be useful for human rights groups that are designing case databases of human rights violations.

The concrete deliverables are:

1. The OntoRights in two versions: Full OntoRights and Simple OntoRights. The difference between the two is explained in 3.2.3. Design and Develop Artefact.
2. A practical Manual for how to use Simple OntoRights for designing case databases of human rights violations.

1.3. Delimitations

- The artefact is primarily evaluated according to how well it contributes to conceptual modelling for case databases in small human rights organisations. Ideally, it will also be a seed for other, technically more advanced uses, such as system integration, but this is secondary.

- The artefact will be delimited to international human rights law. In other words, it does not aim to represent specific national justice systems, nor will it cover International Humanitarian Law (IHL), also known as the laws of war.

- The artefact will be in English only.

- The artefact does not address generic systems management issues such as user privileges, history management, or migration from legacy systems.

- The artefact does not address information security or personal data protection issues that could arise for human rights groups that instantiate the ontology for a real system. That said, note that for example the so-called journalistic exemption (Article 85) under the EU General Data Protection Regulation is to be interpreted widely (Bitiukova, 2020) and arguably should cover most human rights violations documentation.

1.4. Thesis Structure

The thesis structure closely follows the proposal of a Design Science Research (DSR) paper by Johannesson & Perjons (2014, pp. 153-155).

Section 2 provides an extended background about human rights, ontology and human rights technology. Section 3 describes choices of research strategies and methods. Section 4 explains the first two activities of DSR: explicate problem and define requirements. Section 5 covers the design and develop artefact activity, both the ontology development process and the characteristics of the finished artefact. Section 6 is about the demonstration and evaluation activities. As suggested by Johannesson & Perjons (2014), each of sections 4-6 include both method application and results. Finally, section 7 discusses the results of the thesis.

1.5. About the Author

A brief presentation of the author's identity can improve the reliability and reproducibility of a research report (Seale, 1999). The author of this thesis is a 43 years old Swedish male living in Stockholm. He has previously among other things worked with human rights violations documentation for the UN Human Rights agency OHCHR in Colombia and Guatemala.

2. Extended Background

2.1. Literature Review Methodology

A literature review was conducted, drawing from the methodology of Webster & Watson (2002) and Okoli & Schabram (2010). The purpose was to acquire and present the needed knowledge for this thesis. The review focused on the fields of human rights monitoring, Ontology, and their intersections. The section about human rights includes reports and articles by both practitioners and academics. One aim here was to identify to what extent ontologies (in a broad sense) have been used earlier in the practice of human rights violations documentation. In the section about Ontology, the aim was to acquire and present the necessary knowledge to design an ontology. First, a comprehensive report that provided an overview of the field was identified. Second, additional searches for important concepts were done, where appropriate also going "backwards" by reviewing citations, and "forward" by reading articles that cited the article, as described by Webster & Watson (2002, p. XVI).

An overview of the results of the literature review can be found in Annex I, showing the relations between 34 sources and 12 topics. Only those concepts in each source that were finally cited in 2. Extended Background were included, i.e.some sources actually cover more topics than is indicated. Sources about DSR were not included in the overview.

2.2. Human Rights

Human rights can be understood from different angles. This section is about the human rights protection system and human rights practice, including human rights technology .

2.2.1. The Human Rights Protection System

A basic understanding of the workings of the international human rights system will help the reader to understand this thesis and the proposed ontology. This section was mostly written based on prior knowledge of the thesis author, however, the explained concepts are also described in e.g. OHCHR's *Manual on Human Rights Monitoring* (2011).

2.2.1.1. International Law

The human rights system is ruled by international law (*Manual on Human Rights Monitoring*, 2011). Nation states recognize human rights by ratifying international treaties. By doing so, they guarantee that they will respect, protect and fulfil the included rights within their jurisdiction. To *respect* means that a state and its agents should not itself violate a right, e.g. a police officer should not use disproportionate force. To *protect* means that the state should also protect people from third parties, e.g. individual criminals or companies. To *fulfil* implies that the state should also take other proactive measures, e.g. having a free primary level education system.

2.2.1.2. Treaties

International treaties are the foundation of international law (*Manual on Human Rights Monitoring*, 2011). Then a new treaty has been negotiated, commonly by the United Nations (UN), the respective

states can choose to accept it by first signing and then ratifying it. Among the core treaties can be mentioned:

- International Covenant on Civil and Political Rights
- Convention on the Rights of the Child
- Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment

In addition to the treaties, there is also *customary law*, i.e. law that through its wide acceptance does not need written sources, and applies to *all* states. One example is the prohibition of slavery (*Human Rights in Customary International Law*, n.d.).

2.2.1.3. Mechanisms

Treaties include the creation of *treaty bodies*, which are international organs with the mandate to monitor that the states comply with a treaty (*Manual on Human Rights Monitoring*, 2011). Important parts of their work are to receive complaints about emblematic human rights violations and to develop jurisprudence. However, the enforcement mechanisms of the international human rights system are overall weak (Aronson & Land, 2018, p. 4).

A more flexible but powerful type of mechanism is the UN Special Procedures. Each special procedure is constituted by one or more independent experts within a domain, e.g. human rights defenders. Yet another type of mechanism is the Universal Periodic Review (UPR), which every four years scrutinises each UN member state.

2.2.1.4. National Law

Human rights are also regulated in national law, which should comply with international law (*Manual on Human Rights Monitoring*, 2011). National laws can add increased granularity to the more general standards in international treaties. Therefore, a violation of national human rights law can additonally constitute a human rights violation. However, abusive national law can also be a breach of international human rights law.

2.2.1.5. Human Rights Violation

A human rights violation is an incident or situation which violates the human rights of an individual or group (*Manual on Human Rights Monitoring*, 2011). Human rights violations can be committed through commission (activity) or omission (passivity). Even if a concrete act is perpetrated without collusion of state agents, the state could in some cases still be held responsible if it has been unwilling to take measures to avoid the act. In other words, the direct perpetrator of an act that constitutes a human rights violation can be a non-state actor, e.g. a spouse or a business.

Human rights violations have consequences in both the physical and institutional world:

- Physical and social: The harm inflicted on victims, including social effects.
- Criminal law: A human rights violation may be considered a crime under national law, for which one or more individuals could be prosecuted. Exceptionally it could also become a case under international criminal justice, such as the International Criminal Court (ICC).
- Human rights law: If state institutions failed to comply with their obligations to respect, protect and fulfil the human rights of its inhabitants, then the state, as opposed to individuals, is held responsible.

2.2.2. Human Rights Practice

Human rights practice, also called human rights work, contributes to uphold the enjoyment of human rights. A person that engages in human rights practice is reffered to as a human rights practitioner or human rights defender.

2.2.2.1. Human Rights Reporting

Human rights reporting is closely related to human rights violations documentation. In this thesis, the two terms are used synonymously. Guberek & Silva (2014) have developed a framework[6] for the data life-cycle of human rights reporting. The authors point out that this cycle can work both as a pipeline and as an iterative process involving all or only a subset of the four stages.

Figure 1
The Human Rights Data Life Cycle
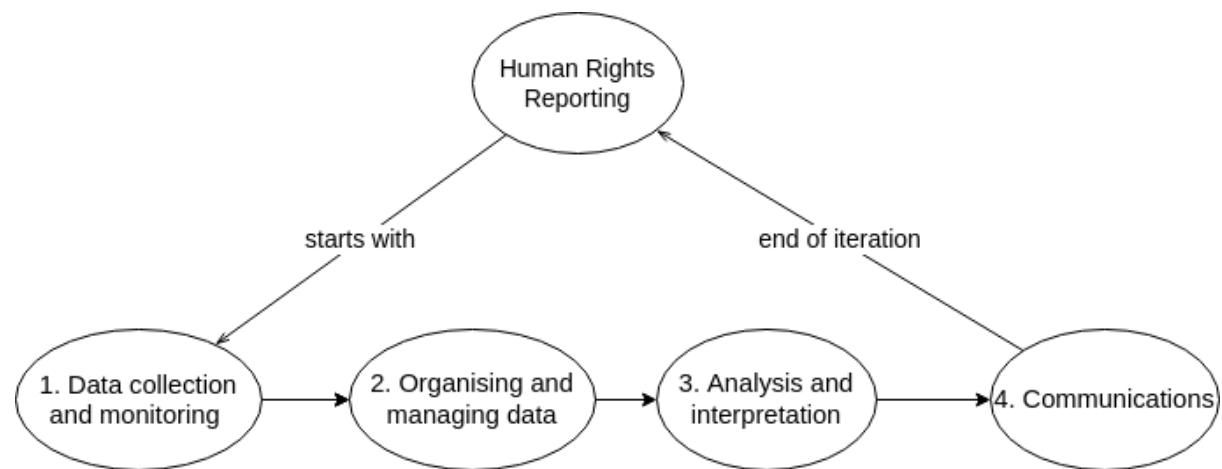
Note. The figure is adapted from Figure 1 in Guberek & Silva (2014, p. 24).

2.2.2.2. Human Rights Monitoring

Human rights monitoring is a partly overlapping concept with human rights reporting and human rights observation. The distinctive of human rights monitoring is working close to the events in time and space. The objective is not only to establish the truth but also to influence the course of events. It often includes interacting with both victims, witnesses and alleged perpetrators.

Human rights monitoring is case work, in particular in the first phase of the data life cycle. A case normally starts with some initial information that initiates an investigation. Step by step more sources are added and the often contradicting information is analysed to build a timeline of events. That timeline is then subject to legal analysis, which conclusions are used for either closing the case, further investigation, or different forms of intervention. This is an iterative process.

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[6] A full copy of the Human Rights Data Life Cycle framework of Guberek & Silva (2014) can be found in Annex II, including examples of methods and useful technologies relevant for each stage.

2.2.3. Human Rights Technology

Technology can be used for control as well as liberation (Piracés, 2018, p. 306) and is consequently both a threat and opportunity for human rights defenders. The threats include e.g. increased surveillance and lack of privacy. Moreover, violations in the digital realm interact with violations in the physical world (Guberek & Silva, 2014). Examples of opportunities include crowdsourcing, monitoring of social media content, and the use of open and big data for early warning systems (Poblet & Kolieb, 2018). This section is about the opportunities.

Like other fields, human rights work has adapted to technological development in many different ways. For example is computational analysis increasingly used in human rights research (Piracés, 2018, p. 289). However, the journey has been slow. Below is one illustrative quote from a pro bono Google Fellow who helped HURIDOC to develop a machine learning solution for text categorization, for the benefit of another organisation.

> "When I started working with HURIDOCS, I was amazed to discover that there was this whole corner of the information universe that had seemingly been left behind — namely a lot of critical human rights documentation. While it may technically be accessible on the internet, a lot of it is missing that next level of organization that makes it actually useful." (HURIDOCS, 2020)
>
> <div align="right">Grace Danciu, Google.org fellow with HURIDOCS</div>

The general lack of resources for human rights practitice has caused few technologies to be developed specifically for this field (Piracés, 2018, p. 293). Among the exceptions can be mentioned the OpenEvsys documentation system developed by HURIDOCS for recording human rights violations. However, it was discontinued in 2020, for among other reasons lack of flexibility (*Announcing the Sunset*, 2020). According to Guberek & Silva (2014, p. 44) there is much evidence that tool centric approaches, i.e. build a specific tool and propose human rights practitioners to use it, has often led to low adoption rates. Instead, the authors argue for more long-term support based on a systemic view.

Piracés (2018, p. 297) mentions Artificial Intelligence (AI), machine learning and natural language processing as interesting areas for future advances of human rights technology. These fields relate to the information overload problem, which, in turn, ontologies can play a role in mediating (Bergamaschi et al., 2010, pp. 11-12). Today's abundance of social media content, videos and remote sensors is useful for human rights monitoring (Piracés, 2018), but will also make the information overload worse. Hence, in the words of Guberek & Silva (2014, p. 13), "the quantity of data available requires careful organisation and preservation to enable its use in long-term struggles for truth and justice". However, the reviewed literature (Piracés, 2018; Aronson & Land, 2018; Poblet & Kolieb, 2018) conveys the impression that the human rights technology field has given more priority to extract information than to structure it. In other words, there is a technological void in the second stage – organising and managing data – of Guberek & Silva's (2014) framework (see Figure 1). This gap includes the lack of formal ontologies.

2.3. Ontology

2.3.1. Definition

An ontology can be understood as a comprehensive and shared conceptual data model. As shown in Table 1, a conceptual model is different from a logical or technical data model.

Table 1

Data Model Types

Term	Explanation
Conceptual model	A conceptual model is often the first step of database design and is best done in close collaboration with experts from the business domain. Often it is limited to a diagram that defines classes (concepts) and their relations, including cardinality (e.g. one-to-many, many-to-many)
Logical model	A logical model is the next step, in which the columns (attributes) of the classes are added, perhaps also the column type. A logical model is still independent from the Database Management System (DBMS).
Technical model	A technical model is a complete blueprint of how the model should be implemented in the chosen Database Management System (DBMS). It includes primary and foreign keys, and association tables.

Note. The explanations are from *Data Modeling* (2018).

The word "Ontology" has philosophical roots in the efforts by the Greek philosopher Aristotle to classify the world (Studer et al., 1998, p. 184). The term was introduced to the information systems field by AI researchers. While some authors use it in a broad sense, referring to any systemized knowledge about how different concepts relate to each other, others mean only the highly formalised, machine-readable, ontologies. In this thesis the term 'ontology' is normally used in a narrow sense, restricted to models based on formal logic. A widely cited definition of ontology was done by Gruber (1995, p. 908; Uschold & Gruninger, 2004, p. 59) and reads: "An ontology is an explicit specification of a conceptualization". A perhaps more pragmatic definition by Noy & Mcguinness (2001), is that "an ontology defines a common vocabulary for researchers who need to share information in a domain. It includes machine-interpretable definitions of basic concepts in the domain and relations among them."

Among others Studer et al. (1998, p. 185) state that ontologies should capture consensual and static knowledge. However, while some ontologies only include classes (e.g "Person"), other ontologies also include instances (e.g. "Martin Luther King") of classes. There is also a lack of agreement regarding the terminology for concretely describing ontologies, as shown in Table 2. Moreover, the difference between ontology and the related concept *taxonomy* is vague. According to Studer et al. (1998, p. 184) ontologies differ from taxonomies in two ways: (1) they have a richer internal structure, and (2) they reflect some consensus. Similarly, Schweizer (2021) claims that compared to taxonomies, are ontologies more formalised and with a higher level of sophistication.

Table 2

Ontology Glossary of Terms

Word	Explanation
Concepts/Classes /Term/Frame	E.g. **human**.
Instance	An instance of a class. E.g *Martin Luther King* is an instance of a **human**.
Attribute/Slot	A class has attributes, e.g. **Year of birth**. An instance of a class has attribute values, e.g. *1929*.
Inheritance	Both sub-classes and instances inherit the properties of the class they belong to. E.g. the city of *Selma* is a part of the state of *Alabama*, which is part of the *United States of America*. Ergo, also Selma is part of the US.
Relation/Edge	A concept is normally related to at least one other concept. E.g. *The Civil Rights Movement - <u>used</u> - Nonviolence*
Constraint/Restriction	Many classes can by definition only have certain values. E.g. a **grandmother** must have at least one **child**, or the **age** of something cannot be a negative value.
Axioms	Classes are defined by axioms, including attribute, relations, and constraints.
Triple	An expression of how a subject (a concept) has a predicate (relation) to an object (another concept, or a value). E.g. *Martin Luther King - was - human rights defender*.

Note. The definitions draw mostly from OWL Web (2004), and also from Nguyen (2011, p.6) .

2.3.2. Benefits of Ontologies

Ontologies can contribute to reduce the problem of semantic heterogeneity, i.e. that different systems do not use the same, well-defined, concepts (Uschold & Gruninger, 2004, p. 59). Moreover, ontologies help also people to share a common understanding of a domain (Uschold & Gruninger, 2004, p. 61). Among other benefits, ontologies enable interoperability and knowledge reuse (Yang et al., 2019; Woods, 2020). Referring back to the data life cycle framework by Guberek & Silva (2014) in Figure 1, ontologies can be useful in different stages of human rights reporting.

Table 3

Benefits of Ontologies for Human Rights Reporting

Stage	Examples	Benefits of ontologies
1. Data collection and monitoring	Data capture in the form of text mining	Ontologies can be used as a part of natural language processing (Afolabi et al., 2019; Studer et al., 1998, p. 185).
2. Organising and managing data	Database design	Complete or partial pattern reuse (El-Ghalayini et al., 2010; Ruy et al., 2015).

3. Analysis and interpretation	Finding patterns	Ontologies can help artificial intelligence applications to understand how concepts relate to each other (Woods, 2020).
4. Communications and strategic use of evidence	Publishing open and structured data	In general, ontologies can increase interoperability. In particular, ontologies are needed for producing linked open data on the semantic web (Yang et al., 2019)

Note. The first two columns are adapted from the data life cycle framework by Guberek & Silva (2014).

Regarding the stage of organising and managing data, ontologies can be useful in more than one way for database design. An ontology contains embedded knowledge and patterns that can support the development of a conceptual model for a specific database (Ruy et al., 2015). This can either be done manually, by analysing the domain ontology, or semi-automatically, by using tools that convert parts of an ontology to data models (El-Ghalayini et al., 2010; Hajji et al., 2019; Uschold & Gruninger, 2004, p. 62). An important point is that domain ontologies do not necessarily have to be implemented as they are in the data model of a particular application. Instead, they can also just serve as inspiration for the data model.

2.3.3. Ontology Generality

Ontologies can represent different levels of generality. Different authors use slightly different categorizations. Drawing from Nguyen (2011), Studer et al. (1998), and Griffo et al. (2020), the most important types for this thesis are, in descending order of generality:

- *Foundational ontologies* (top-level): define core concepts about the world, such as "thing", "process", "event".
- *Core ontologies* (mid-level): define concepts for a very broad domain, such as the law domain.
- *Domain ontologies*. As the name suggests, define concepts within a more narrow domain.

A domain ontology should preferably extend a core or foundational ontology. One reason is reusing thoroughly designed patterns, which facilitates logical coherence (Hoekstra et al., 2009). Another reason is increased interoperability, in particular if the chosen foundational ontology is widely used.

2.3.4. Ontology Languages

A higher level of expressiveness means that more knowledge can be represented and more advanced reasoning performed (Nguyen, 2011). However, expressiveness also comes with a cost (Uschold & Gruninger, 2004, p. 60). More expressive languages require more design effort, higher computational costs, and are more difficult for humans to understand (Nguyen, 2011).

Several traditional and web ontology languages exist. The latter category is based on the web standards XML and RDF to facilitate interoperability (Nguyen, 2011, p.7). Resource Description Framework (RDF) is a World Wide Web Consortium W3C standard that uses triples - subject, predicate, and object - to create a directed graph model understandable by machines. The Web Ontology Language (OWL) was developed for representing ontologies on the web and is a W3C

standard since 2004. A less known ontology language is OntoUML, an extension of Unified Modeling Language (UML) developed specifically for the foundational ontology Unified Foundational Ontology (UFO).

2.3.5. Ontology Tools

A large number of tools exist for developing and managing ontologies. The most widely used is Protégé (Nguyen, 2011, p. 40), which is a free and open-source editor built on java. Protegé allows ontologies to be stored in for instance OWL. It has a flexible environment that allows plug-ins. Protégé is originally a desktop application, but a simplified version exists on the cloud in the form of WebProtégé (Tudorache et al., 2011). Another ontology tool is the OntoUML Visual Paradigm plugin.

2.3.6. Methodologies and Specifications for Ontology Development

To design a new ontology choices need to be made about extending any foundational or core ontologies, and which language and tool to use. Commonly also a specific methodology is used. An *ontology development methodology* should facilitate shareability, reusability and scalability (Nguyen, 2011, p. 11). A hands-on example of a methodology is outlined by the team behind the Protégé tool (Noy & Mcguinness, 2001). It emphasises that ontology design is an iterative process where choices must be made between many different viable alternatives.

Regarding reusability, one approach is ontology patterns, which entails extracting fragments from existing ontologies with a higher, or sometimes equal, level of generality (Ruy et al., 2015, p. 174). When possible it is preferable to reuse existing core or domain ontologies before foundational ontologies, since the former embed not only structural but also domain knowledge (Ruy et al., 2015, p. 177). An important role of foundational ontology patterns, however, is that they can provide the missing concepts that tuns separate domain ontology fragments into one consistent model (Ruy et al., 2015, p. 185). Finally, an important point is that just as a new ontology can be created with pattern reuse from existing ontologies of an equal or higher level of generality, also a conceptual model for a particular system can also use this approach, and e.g. reuse ontology patterns from a domain ontology (Ruy et al., 2015, p. 174).

2.3.7. Ontology Modularisation

There are many reasons why a certain user or application may only need parts of an ontology. One is to make reasoning more feasible, another is to reduce the complexity of a concrete system. Additional arguments are improved management and maintenance (Nguyen, 2011, p. 34; Khan & Keet, 2015, p. 174). Modularisation can be done both manually and facilitated by tools. The latter are necessary for very large ontologies (some cover more than 100,000 terms).

Modularisation can be achieved from two directions (Nguyen, 2011, p. 34): While top-down implies *partitioning* (decomposition), bottom-up means *integration* (composition) of existing ontologies. Ontology integration consists of various other concepts, that here will be explained drawing from (Nguyen, 2011, p. 16). *Matching* means finding correspondence between concepts or instances in different ontologies. Small ontologies can be matched manually, a so-called naive approach (Djenouri et al., 2021). The concrete results of matching, *alignments*, can be used for either merging or mapping. *Merging* is to make a new ontology out of two others. This approach is best suited for fairly small and static ontologies, with little need for scalability. *Mapping* means relating the ontologies to each other while remaining intact, which can involve common foundational ontologies and *semantic bridges* that

explicitly state the correspondence between concepts. Semantic bridges are suitable for growing and dynamic systems, such as the semantic web.

2.4. Existing Ontologies Related to Human Rights

A number of ontologies exist that have relevance to the domain of human rights violations.

2.4.1. Institutional Modelling

A human rights violation takes place in the physical world, inflicting physical and/or mental harm on the victim. But these acts also have institutional implications. Eriksson et al. (2018) have recently developed an ontology for institutional modelling that represents how institutional facts are grounded in physical facts. The authors emphasise that the embedded knowledge in information systems is not only descriptive but also prescriptive, i.e. influences the institutional reality around them. This is interesting for human rights reporting since the point of telling the truth is to influence future events.

A disadvantage for the purpose of this thesis is that this ontology has no legal focus. Moreover, it is not connected to a foundational ontology.

2.4.2. Legal Ontologies

As explained, human rights violation is a legal concept since it constitutes a breach of international law. In a systematic review by Rodrigues et al. (2019), 78 studies of legal ontologies between 1997 and 2017 were included, from the foundational level to the application level. Twelve legal subdomains were discovered, but human rights or international law were not among them.

As argued by Rodrigues et al. (2019, p. 16) a legal ontology should be based on a legal theory. One major stream of legal theory is *Positive Theory* by the so-called Kelsen-Hart-Hohfeld triad. However, in human rights case law often conflicting principles must be balanced, something Positive Theory does poorly (Invernizzi-Accetti, 2018). Another legal theory, more suited for these situations, is Robert Alexy's Theory of Constitutional Rights (Griffo et al., 2020).

Different legal core ontologies have been developed. One of the most cited is Legal Knowledge Interchange Format (LKIF) Core. Its authors argue that legal world knowledge is an abstraction of common sense (Hoekstra et al., 2009, p. 25) and that it is more important for a legal ontology to represent how humans interpret the world than to reflect advanced philosophy. The authors state they evaluated several foundational ontologies such as the Suggested Upper Merged Ontology (SUMO) and DOLCE to reuse for LKIF Core, but found no convincing candidate. One problem was the lack of common sense. LKIF Core is represented in OWL-DL.

Interestingly, the designers of LKIF Core do not mention Unified Foundational Ontology (UFO) among the foundational ontologies they reviewed and dismissed. The first version of UFO was developed around 2004 and tried to unify other foundational ontologies, DOLCE and GFO, into one reference ontology for conceptual modelling (Guizzardi et al., 2021a). It has since then been further developed by the NEMO research program (*Nemo*, n.d.). A relatively recent legal core ontology, UFO-L, was designed in 2015 based on UFO, as the final product of the doctoral thesis of Griffo (2018). This ontology is explicitly based on Robert Alexy's Theory of Constitutional Rights, while

LKIF-Core is implicitly based on Positive Theory (Griffo et al., 2020, p. 64). UFO-L is represented in OntoUML, but not in OWL.

A problem for the purpose of designing an ontology for human rights violations documentation, however, is that human rights violations are related to many other parts of reality than law, such as physical facts, events and organisational structures. Hence, a legal ontology can only represent a small part of the domain of human rights violation documentation. Another problem is being rather abstract. This creates flexibility, but also makes the gap between ontology and a concrete conceptual model rather wide.

2.4.3. Human Rights Violations Data Models and Ontology

As mentioned in 1.1. Problem, the existing model that to the knowledge of this author most closely resembles an ontology for human rights violations documentation is the Events Standard model designed by HURIDOCS (Dueck et al., 2001, p. 223/Appendix C). It has a focus on describing events, acts, roles, and people, aiming to answer:

- What happened? Who did what to whom?
- What actions were taken in response? Who did what?

The Events Standard can be described as in between a logical and a physical model. It includes association tables and attributes with detailed multi-lingual enumeration lists, called a Micro-thesauri[7], covering e.g. rights typology, occupations, and etnic groups.

There are, however, questions in the human rights violations domain to which the Events Standard answers poorly, for instance, "what are the human rights implications" and "how do we know this?". Moreover, even if its authors address the issue of adaptability, this quality appears to be limited. Also, there is no clear distinction between institutional fact and physical facts. Finally, since it was designed around two decades ago, it is represented in a pdf-file and Google Spreadsheets, lacking the benefits of newer modelling tools.

The Events Standard has also inspired academic research. Harrison et al. (2020), outline an ontology based classification scheme for integration of human rights violations data, in which they use the Events Standard and the International Crime Classification Scheme (ICCS) by the UN Office on Drugs and Crime. Their goal is to promote data aggregation and shared indicators, which ultimately would benefit the reporting also on the highest levels. The authors focus on UN Sustainable Development Goal (SDG) 16.10.1, which relates to serious human rights violations against journalists.

2.4.4. Human Rights Databases

The design of existing human rights databases of different kinds can provide useful hints for conceptual modelling. Also, when they include a certain concept or instance, this can be linked to from another database as a simple way to provide more context. Additionally, some of their content has practical use as reference data. Below follows two prominent examples.

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[7] The Micro-thesauri is available at
https://huridocs.org/resource-library/monitoring-and-documenting-human-rights-violations/microthesauri/

- The UN Universal Human Rights Index contains 170.000 observations and recommendations. They can be filtered according to country and region, mechanism, human rights theme (encompassing type of violation and affected right), concerned group, and concerned SDG.

- The WhoWasInCommand database gathers allegations of abuses against units of armed forces and security forces (*WhoWasInCommand*, 2022). The objectives include revealing how these actors are organised and which individual was in command of a certain unit at a certain time. The key entities are units, persons and incidents.

Of course, since such databases only serve specific purposes, they are too narrow and specific to convert to a domain ontology.

2.4.5. Humanitarian Ontologies

Humanitarian aid is related to the field of human rights with regards to its goals as well as its heterogeneous character. Several humanitarian ontologies can be found in the literature. An example is a domain ontology for communication during floodings (Khantong & Ahmad, 2020). UFO is used as foundational ontology and Protégé as design tool. The research methodology is explicitly Design Science Research (DSR). Another example is the Humanitarian Aid for Refugees in Emergencies (HARE) pivot ontology (Apisakmontri et al., 2016). It is designed to support semantic interoperability and its top-level concepts are mapped to three foundational ontologies. The used tool was Protegé and the language OWL. A document study of international standards was used for requirements elicitation.

2.5. Information Infrastructures Design Theory

The design of an artefact can be informed by a design theory. Which theory to use depends on the type of artefact. Ontology design can be supported by the socio-technical Information Infrastructures (IIs) design theory by Hanseth & Lyytinen (2010). The authors argue that conventional design theory in general wrongfully assumes a static environment and a designer in control of the design space. This might often be true for less complex types of IT artefacts such as single IT capabilities, applications and even platforms, but not for IIs, which the authors define as: "A *shared*, *open* (and unbounded), *heterogeneous* and *evolving* socio-technical system (which we call *installed base*) consisting of a set of IT capabilities and their user, operations and design communities" (Hanseth & Lyytinen, 2010, p. 4).

As explained by Gregor & Hevner (2013, p. 340), "A mature body of design knowledge should include kernel theory because such theory explains, at least in part, why the design works". The design theory of Hanseth & Lyytinen (2010) uses Complex Adaptive Systems (CAS) as kernel theory. Accordingly, they find it better "to prefer continuous, local innovation, to increase chaos, and to apply simple designs and crude abstractions". Arguably, CAS fits well with the systemic (as opposed to tool-centric) approach to human rights technology suggested by Guberek & Silva (2014, p. 44) in 2.2.3. Human Rights Technology.

Hanseth & Lyytinen (2010) identifies two inherent and conflicting problems of IIs design: the bootstrap problem (how to attract a critical mass of users) and the adaptability problem (how to prepare the system to grow and thrive). As a solution, the authors propose five design principles,

shown in Table 4. The principles are further broken down into 19 design rules, which are not discussed in this thesis.

Table 4

Information Infrastructures (IIs): Problems and Design Principles

Problem	Design Principle
The II bootstrap problem	1. Design initially for usefulness
	2. Draw upon existing installed base
	3. Expand installed base by persuasive tactics
The II adaptability problem	4. Make each IT capability simple
	5. Modularize the II by building separately its principal functions and sub-infrastructures using layering and gateways

Note. Adapted from Hanseth & Lyytinen (2010, Table 2)

2.6. Relation to Previous Research

This section discusses the most important points of previous scientific research presented above, and how this thesis builds upon them.

As shown in 2.2.3. Human Rights Technology, the development of human rights technology has been slow, in particular regarding organising and managing data. As described in 2.3. Ontology, a domain ontology can contribute to closing this gap by facilitating conceptual modelling of case databases. Designing an ontology requires choosing foundational and core ontology, language, tools, and methodology. As shown in 2.4. Existing Ontologies Related to Human Rights, previous work does not offer sufficient solutions. The institutional modelling by Eriksson et al. (2018) lacks a legal focus. The legal core ontologies are too abstract and only cover a part of human rights domain. The Events Standard datamodel does not have sufficient institutional or legal focus, and does not support information management. The different data bases provide useful reference data but not very complete data structures. The humanitarian domain shares important aspects with human rights, but not enough. Therefore, a tailored ontology for human rights violation documentation is needed, and can build on the different strengths from the previous research. An important point of the work by Eriksson et al. (2018) is how institutional facts are grounded in physical facts. One type of institutional facts – legal implications – can be modelled with the different legal core ontologies designed by (Hoekstra et al. (2009) and Griffo (2018), which in turn are built on different legal theories, each with its advantages and disadvantages. These rather abstract core ontologies are complemented by a much more concrete and practical asset, namely existing lists of reference data, most notably HURIDOCS' Microthesuari, that also can be reused. Previous ontology development in the adjacent humanitarian domain (Khantong & Ahmad, 2020) offers methodological guidance. Finally, the design can be informed by information infrastructures theory (Hanseth & Lyytinen, 2010).

3. Methodology

3.1. Overall Research Framework

The objective of this thesis is to design an artefact that ideally will have practical use for many different actors around the world. Therefore, the overall methodological framework for this thesis is Design Science Research (DSR). The fundamental elements of DSR in IS were first described by Hevner et al (2004). Soon, Peffers et al. (2007) developed a first process model. DSR provides a roadmap to design useful artefacts grounded in scientific knowledge and research methods. In addition to the concrete artefact, DSR also contributes to expand the knowledge base. IT artefacts can be constructs, models, methods, or instantiations (Hevner et al., 2004, p. 77).

Figure 2

Application of the DSR Method Framework
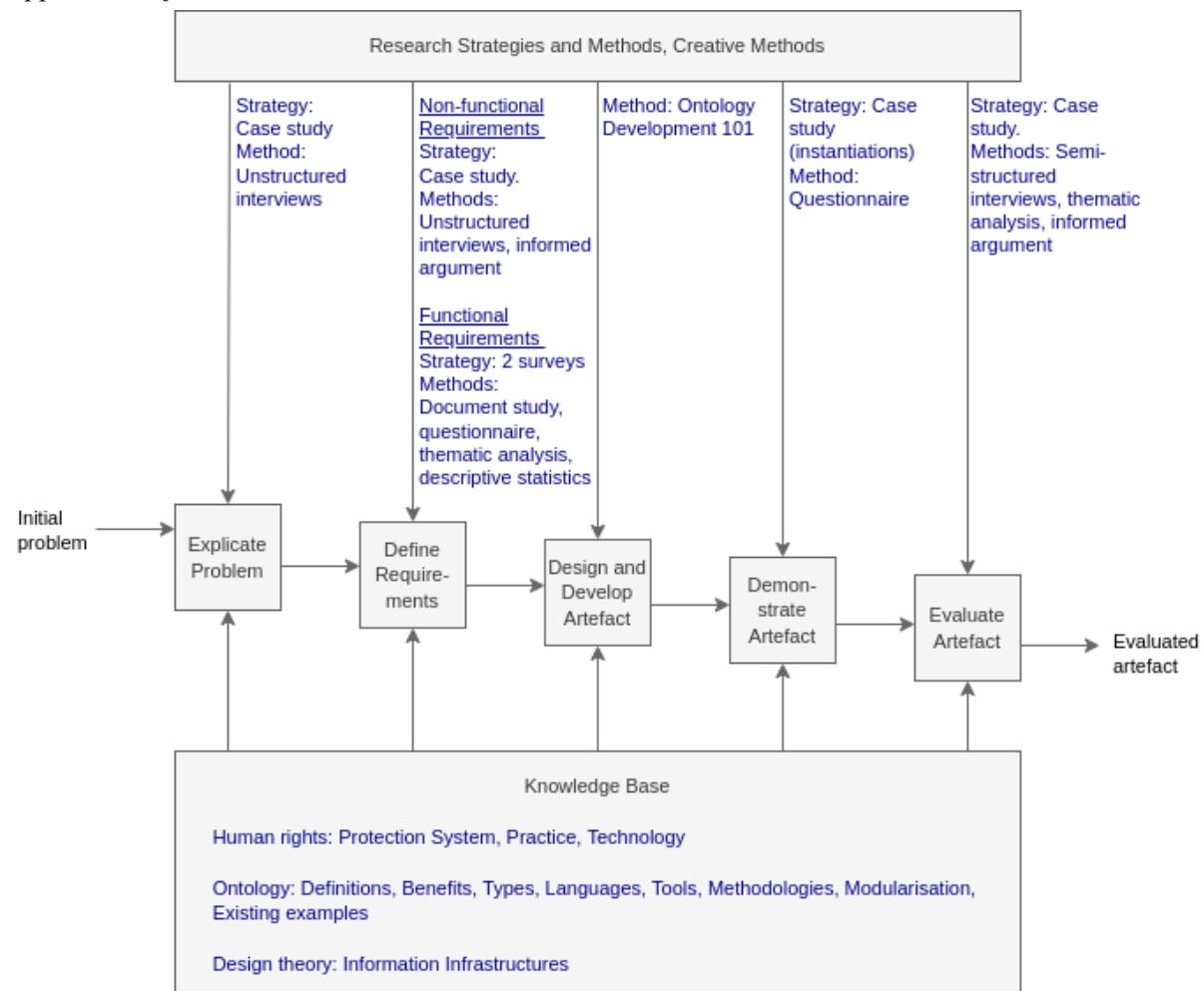
Note. Adapted from Figure 4.4 in Johannesson & Perjons (2014). Text in blue is specific for this thesis.

The DSR framework of this thesis is according to the description by Johannesson & Perjons (2014). It consists of five logically connected activities, as shown in Figure 2. Note that these activities are

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logical phases, as opposed to chronological. Each phase is informed by research strategies and methods, as well as a knowledge base. Note that the method is iterative, and in practice do not have to start with the first activity, but can instead start somewhere else in the process and move outward (Peffers et al., 2007, p. 56).

DSR has been used previously in ontology design, for example by Khantong & Ahmad (2020), whose floodings ontology is mentioned in 2.4.5. Humanitarian Ontologies. An alternative to DSR could have been action research, as described by Denscombe (2010). The practical nature of action research and focus on change fits well with the purpose of this thesis. Also, its constant feedback loops with practitioners, who themselves act as researchers, contributes to grounded results. However, action research does not have the same focus as DSR on creating new artefacts, which is the aim of this thesis. Moreover, the purpose of action research is primarily to solve problems in a specific organisational context (Peffers et al., 2007, p. 74), while this thesis has a broader scope.

3.2. Choice of Research Strategies and Methods

This thesis includes all five activities of DSR, but the focus is on the second and third activity: define requirements and design and develop artefact activities. As explained by Johannesson & Perjons (2014), a DSR project does not have to cover the complete DSR framework.

3.2.1. Explicate Problem

The research strategy for the explicate problem activity was a descriptive case study and the unit of analysis was HURIDOCS. As the literature provided little knowledge about the process of conceptual modelling by human rights groups, more had to be discovered.

A case study is according to Dencombe (2010) an in-depth study that aims "to illuminate the general by looking at the particular" (p. 53), and is particularly effective for understanding processes and relationships. Furthermore, according to Yin (1981, p. 98), "the peculiar strength of the case study is its ability to cover both a contemporary phenomenon and its context". However, a common critique of the case study strategy is its low generalizability of the results (Yin, 2009, p. 15). Another point of discussion is what exactly constitutes a case study. The difference between a case study and survey strategy is not always clear-cut. For example, some researchers argues that a case study must be holistic (Verschuren, 2003, p. 128), a position that the author of this thesis subscribes to.

Regarding the explicate problem activity in DSR, Johannesson & Perjons (2014, p. 96), claim that case studies "can provide a deep understanding of the practice in which an initial problem emerged". In ontology design, the case study strategy can be used to design ontologies not only about a certain organisation, but also a whole domain. For example, Hadjar (2015), designed an ontology about universities based on studying the reality of one single university. This may appear contradictory since an important point of an ontology is being a shared, generic model that represents consensus about a domain (Nguyen, 2011). However, even if human rights groups are very heterogeneous, they share a common system defined by international human rights law, and use variants of the same principles for human rights violations documentation. Lincoln & Guba (1985, p. 124) argue that transferability (generalizability) depends on the similarity between two contexts, which they call "fittingness". In this sense, the "fittingness" between two random human rights groups can be expected to be high.

3.2.1.1. The Case: Selection and Boundaries

Even if this section is about application of method application rather than choice, it will be presented already here since the selection of the case was so fundamental for the thesis that it would be difficult to discuss the following DSR activities without it.

The case of a case study needs to be selected based on explicit properties (Denscombe, 2010, p. 57). HURIDOCS was selected as the unit of analysis for two main reasons. First, HURIDOCS has a probably unique knowledge of human rights violations documentation. Second, HURIDOCS is not focused on any particular type of human rights issues or region, at least not intentionally. Third, this organisation has access to many other human rights groups in its network. Hence, the generalizability of the results is arguably high for a case study.

Yin (2009, p. 32) explains that the immediate topic of a unit of analysis must be distinguished from its context, e.i. the boundaries of the selected case need to be defined. HURIDOCS does much work that is not directly related to the problem addressed by this thesis. Therefore, it should be noted that even if this thesis simply refers to HURIDOCS as the case, it really means the work conducted by HURIDOCS to support human rights groups with conceptual modelling. Another issue of boundaries was how to view the human rights practitioners that were or had been involved in developing HURIDOCS' above-mentioned Community Resource. Precisely for having taken active part, they were also considered to be part of what Yin (2009) refers to as the immediate topic.

3.2.1.2. Data Collection Method

The data collection method for further explicating the problem was unstructured interviews. This method was chosen for its capacity for producing depth and detail, openness for the priorities of the participants, and high validity, since "direct contact at the point of the interview means that data can be checked for accuracy and relevance as they are collected" (Denscombe, 2010, p. 192). Additionally, unstructured interviews are even more open for the participants' thoughts than semi-structured or structured interviews, which was an advantage at this early stage of the research when the author had limited knowledge of the topic and had made few decisiones about the research process.

3.2.1.3. Data Analysis Method

No particular data analysis method was used. As stated previously, the explicate problem activity was not the focus of this thesis.

3.2.1.4. Alternative Strategies and Methods

A weakness of the chosen strategy and method for explicating the problem is that it relied heavily on a few persons within a single organisation, as well as the skills and experience of the author, which could limit the transferability (generalizability) of the collected data (Denscombe, 2010, p. 300). An alternative to case study could have been a survey strategy. A strength of a survey is that many views can be collected and patterns identified (Denscombe, 2010). The alternative data collection method could have been a web questionnaire, which allows for high reach at low cost. Additionally, a subset of the participants could have been invited to semi-structured interviews for deeper understanding. However, the author decided to prioritise the unique competence and network of HURIDOCS, as explained above. Also, there was a lack of adequate sampling frames, and the response rate could have been unsatisfactory.

3.2.2. Define Requirements

Requirements can be of two types: functional and non-functional (Johannesson & Perjons, 2014, p. 5-6). For OntoRights, first, the non-functional requirements, i.e. generic qualities, were elicited. Then, functional requirements, i.e. specific competency questions, were defined.

3.2.2.1. Non-functional Requirements

Preliminary non-functional requirements were elicited as a continuation of the explicate problem activity. In other words, the research strategy was again a case study of HURIDOCS, and the data collection method for defining preliminary requirements was unstructured interviews with HURIDOCS, and no particular data analysis method was used.

The case study strategy has been used previously for eliciting ontology requirements, e.g. by Dharmawan et al. (2018), who used incidents reports as well as observation and interviews with staff to design an ontology for incident management. While Dharmawan et al. (2018) as advised by Yin (2009, p. 2) use multiple sources of empirical evidence, this thesis used a more theoretical approach. The preliminary requirements from the unstructured interviews were developed further through informed argument drawing from studies of human rights technology and the information infrastructures design theory by Hanseth & Lyytinen (2010). *Informed argument* is a light-weight method proposed by Hevner et al. (2004, Table 2) in the context of DSR evaluations, and implies building a convincing argument from a knowledge base. This method can arguably also be used for requirements elicitation.

Alternative Strategies and Methods

In the above strategy and methods for defining non-functional requirements, the weakness regarding transferability was repeated from the explicate problem activity, so logically also the alternative strategy – survey – could have been repeated. However, as the author at this later stage in the research would have more knowledge of the subject matter, the data collection method could in that case have been semi-structured interviews instead of unstructured. The data analysis method would have been thematic analysis, as described by Braun & Clarke (2006). This alternative strategy would make it possible to distinguish the ideas that were shared across the field from those held by just a few people.

The main reason for that the alternative strategy was not used was, again, giving priority to the advantages of HURIDOCS' competence and network.

3.2.2.2. Functional Requirements

The functional requirements express what entities, relations and situations the ontology will be able to represent, i.e. competency questions (Noy & Mcguinness, 2001, p. 5). They were elicited in two phases, with surveys using non-probability sampling (Denscombe, 2010, p. 24). Surveys are useful for acquiring information about relatively uncomplicated facts about specific issues (Denscombe, 2010, p.12). First, a qualitative Document Survey was done, and second, a quantitative Practitioner Survey. Both were descriptive, as opposed to analytical (Singh et al., 2019, p. 990). While the aim of the Document Survey was to acquire a complete picture of the domain, the purpose of the Practitioner Survey was to understand what to prioritise within that domain. Concretely, the Document Survey grounded the questionnaire that was used in the Practitioner Survey.

Documents Survey

Relation to Current Research Studies

In a previous study, Apisakmontri et al. (2016) had used e.g. the United Nations High Commissioner for Refugees (UNHCR) handbooks for designing an ontology named Humanitarian Aid for Refugees in Emergencies (HARE). As argued in 2.4.5. Humanitarian Ontologies, the humanitarian domain is adjacent to the human rights domain. In this vein, the Document Survey employed a similar approach.

Data Collection Method of the Documents Survey

The data collection method was in other words a document study (Denscombe, 2010, p. 216). Analysis of pre-existing textual sources "allows researchers to have access to data that would otherwise take enormous effort and time to collect" (Morgan, 2022, p. 67). The research population was authoritative manuals about human rights reporting. The validity of a document is the product of its authenticity, credibility, representativeness, and meaning (Morgan, 2022, p. 71). An authoritative manual will likely score high on all four dimensions.

The sampling was exploratory, purposive and cumulative. This survey did not seek to identify the most prioritised expressions, as this was done later in the Practitioner Survey. Hence, the purpose was not to obtain a representative sample of manuals, but rather just a few of the ones with the highest credibility and completeness. In these situations, Denscombe (2010, p. 24) argues that exploratory samples can be used. Also, according to Denscombe (2010, pp. 34-36), *purposive sampling* entails choosing the best objects according to prior knowledge, and is effective when the researcher already is highly familiar with the research population, which was true in this case. Moreover, Morgan (2022, p. 72) highlights purposive sampling as a possibility for document studies. *Cumulative sampling* (Denscombe, 2010, p. 40) means that the researcher continues to add to the size of the sample until a point is reached where there is sufficient information and where no benefit is derived from adding any more to the sample". Also Morgan (2022, p. 72) argues for cumulative sampling in document studies. An additional argument for using cumulative sampling in the Document Survey was that it was hard to estimate beforehand how much the investigated manuals would differ from each other, and therefore continue to add useful information.

Data Analysis Method of the Documents Survey

The data analysis method of the manuals was template thematic analysis (Brooks et al., 2015) but also draws from reflexive thematic analysis (Braun & Clarke, 2006; Braun et al., 2019). According to Morgan (2022, p. 72), thematic analysis is the natural choice for document analysis due to being highly adaptable. *Thematic analysis* is a method for identifying themes, or patterns, in and across qualitative datasets. The themes are formed by coded text extracts. Also (Braun et al., 2019) recognize the variety of thematic analysis, and emphasise that the author must do a number of explicit choices within this palette. An advantage of template analysis compared to reflexive thematic analysis is that it is less time consuming, since it allows for defining themes early in the process, or even *a priori* (Brooks et al., 2015, p. 206). However, both Brooks et al. (2015) and Braun et al. (2019) concur in recognizing that thematic analysis can be configured in many different ways depending on the conducted study. This study defined all lowest level sub-themes early, just after the initial coding.

Coding can be either theoretical or inductive (Braun & Clarke, 2006). Theoretical coding is adequate when there is a highly specific research question, and pre-existing coding frame is used. This study coded the extracted text segments as triples, such as "person - employed by - organisation" to create a graph that was also a first step towards an ontology. Hence, the coding was theoretical.

Coding can also be either latent or semantic (Braun & Clarke, 2006). Latent coding goes beyond the explicit meaning of the extracts. An advantage of latent coding was to get an arguably more complete and accurate picture of the domain, thereby gaining credibility (validity), as defined by Denscombe (2010, p. 299). A disadvantage was that the result became more dependent on the researcher, i.e. losing dependability (reliability), as defined by Denscombe (2010, p. 299). The coding of this study was latent, in order to benefit from the prior domain knowledge of the author.

Practitioners Survey

Relation to Current Research Studies
As stated above, Apisakmontri et al. (2016) used a document survey for eliciting competency questions. However, this approach alone could be criticised for lacking validity. Therefore, in this thesis, the functional requirements were also grounded in the knowledge of end-users through the Practitioner Survey. This constitutes a methodological, between-methods, triangulation (Denscombe, 2010, p. 346; Lincoln & Guba, 1985, pp. 304-307)

The research population was human rights practitioners around the globe with interest in conceptual modelling. As described by Denscombe (2010, pp. 11-12), surveys are effective for a "wide and inclusive coverage". The aim was to understand which of the identified themes and expressions in the Document Survey that were considered most relevant by practitioners.

Data Collection Method of the Practitioner Survey
The purpose of the sampling was representative, but the approach was pragmatic, as described by Denscombe (2010, p. 45). HURIDOCS collaborates with a broad range of human rights groups. For the production of the Community Resource for database design mentioned in 1.1. Problem, HURIDOCS had engaged a network of practitioners as a reference group, and most members of this network were offered to participate in the practitioners survey. Clearly, this network only includes a small part of the research population. However, as Denscombe (2010, p. 45) argues, smaller-scale studies can sometimes take a pragmatic approach and use non-probability sampling also for a representative sample. Even if the accuracy must be sufficient for the purpose, it must also be weighted against available time and resources.

The data collection method was a questionnaire. As argued by Denscombe (2010, p. 156) questionnaires are appropriate to use to gather information from a large number of respondents, when the information is rather straightforward, and there is need for standardised data. Online questionnaires are also effective for reaching participants also far away and in other time zones (Wright, 2019, p. 1341). In the questionnaire, the identified subdomains and some selected expressions from the Document Survey were reformulated as competency questions (Noy & Mcguinness, 2001) with an ordinal scale. Since this quantitative survey builds on a qualitative document survey it constitutes a form of triangulation (Wilson, 2019, p. 49), which increases the credibility (validity) of the results.

Data Analysis Method of the Practitioner Survey
The analysed data was quantitative, and the method was descriptive statistics. An advantage of quantitative research is its relative objectivity (Wilson, 2019, p. 30). Descriptive statistics provide a simple way of summarising findings and describing how the data are distributed (Denscombe, 2010, p. 241). Mean, median, and mode are among the most frequently used descriptive statistics (Wilson, 2019, p. 31). The data from the questionnaire was used to calculate an aggregated ranking of the subdomains according to their perceived importance by the participants (see Annex IV for details).

The ranking in turn informed which aspects to prioritise in OntoRights during the design and develop artefact activity.

Alternative Strategies and Methods

A weakness of the chosen strategy and methods for eliciting the functional requirements, is that the content of the surveyed manuals, which describes a practice, is not exactly the same as which information about that practice that should be stored and searchable in case databases. Another risk is that the questionnaire questions partly reflect the author's unfounded beliefs (Wilson, 2019, p. 30), causing measurement bias (Wilson, 2019, p. 41).

An alternative survey strategy to the proposed one could have been to start asking the practitioners instead of looking at the documents. Sufficient involvement of practitioners is paramount then developing human rights technology, since this field has seen too many technological solutions developed far from the reality in which they are supposed to be used (Piracés, 2018, p. 292; Guberek & Silva, 2014, p. 5). Semi-structured interviews as a data collection method and thematic analysis as data analysis method could have extracted the practitioners' priorities in a more unconditional manner, thereby increasing the room for surprising discoveries. However, there was a risk that the result would not be concrete enough to sufficiently inform the formulation of competency questions. Moreover, it could have been difficult to decide the order of importance between different subdomains.

Yet another alternative to the Practitioner Study, had time and resources been available, would have been a combination of the above. In other words, first do an explorative partitioner survey with semi-structured interviews, and then design a questionnaire for a larger group in order to rank importance of the subdomains and competency questions.

3.2.3. Design and Develop Artefact

For the design and develop artefact activity it is often futile to try to define research strategy and methods according to classical scientific categories (Johannesson & Perjons, 2014). Rather, it is a hands-on, creative and iterative work. For ontology design, however, concrete engineering methodologies do exist.

3.2.3.1. Relation to Current Research Studies

In their design of empathi (sic), an ontology for emergency management, Gaur et al. (2019) reused existing ontologies and datasets when integrating external vocabularies to their ontology. An ontology engineering methodology which recognizes the importance of resume is Ontology Development 101. According to a review by Rodrigues et al. (2019) this was the third most common ontology engineering methodology between 1997 and 2017.

3.2.3.2. Ontology Engineering Methodology

The chosen ontology engineering methodology was Ontology Development 101 by Noy & Mcguinness (2001). The main reason for selecting this methodology was that it is concrete and easy to learn. Other benefits include offering a flexible and iterative process, and considering reuse of existing ontologies (Rodrigues et al., 2019, p. 20).

The elicited requirements informed the choice of foundational ontology, ontology language and other interrelated issues, as well as which subdomains and competency questions to prioritise during the actual design. Foundational and core ontologies were concretely reused through the ontology patterns approach by Ruy et al. (2015) described in 2.3.6. Methodologies and Specifications for Ontology Development.

First, a comprehensive ontology, named Full OntoRights, was designed. Second, it was converted into another version, named Simple OntoRights, much closer to the conceptual model of a working database. As mentioned, a concrete deliverable besides the ontology is a Manual for how to instantiate Simple OntoRights for a concrete database. No specific method was used to write the Manual.

3.2.4. Demonstration

The research strategy was case study. Along with action research, a case study is a natural choice for demonstration, since the purpose is to show that the artefact works for a certain case (Johannesson & Perjons, 2014, p. 134). A similar approach has been used for ontology demonstration in the humanitarian domain (Khantong & Ahmad, 2020).

The above-mentioned Manual was complemented with examples of instantiations of Simple OntoRights for individual human rights groups, one imagined and one real. As argued by Denscombe (2010, p. 133), "cases from real life usually provide better external validity". These instantiations served as demonstration activity.

The data collection method was a semi-structured interview, in which a person from the selected human rights group was asked to provide additional information about their practice and any particular requirements.

No particular data analysis method was used to analyse the obtained information. As stated previously, the demonstration activity was not the focus of this thesis.

3.2.4.1. Alternative Strategies and Methods

An alternative strategy could, as suggested above by Johannesson & Perjons (2014) have been action research, working more closely with the practitioners. They would arguably have learned better how to make use of the ontology, and the artefact could have been modified according to their feedback, i.e. also serving for formative evaluation. However, this strategy would have been too time consuming.

3.2.5. Evaluation

In DSR, this activity investigates how well the artefact solves the explicated problem and fulfil the defined requirements (Johannesson & Perjons, 2014, p. 137).

The evaluation was ex ante, and summative, with both naturalistic and artificial aspects. A fully *naturalistic evaluation* includes real users that use real artefacts to solve real problems (Johannesson & Perjons, 2014, p. 139). Naturalistic evaluations often have high external validity. *Ex ante* entails evaluating the artefact without using it, which can often be done quickly, but the risk of false positives are high. The goal of a *summative evaluation* is "obtaining a final assessment of the utility of the artefact" (Johannesson & Perjons, 2014, p. 138).

The evaluation resumes the case study strategy initiated in 3.2.1. Explicate Problem. The arguments and distinctions from that section will not be repeated here.

The data collection method was semi-structured interviews with staff from HURIDOCS and the real-life case from the demonstration activity. Semi-structured interviews has previously been used by other researches for ontology evaluation, e.g. Khantong & Ahmad (2020), and are according to Johannesson & Perjons (2014, p. 144) "effective instruments for gathering stakeholder opinions and perceptions about the use and value of an artefact".

The data analysis method was theoretical, semantic, thematic analysis (Braun & Clarke, 2006). Also previous research has used interviews and thematic analysis for ontology evaluation, e.g. Youcef et al. (2021), after designing a new ontology for virtual reality training in the ophthalmology domain (diagnosis and treatment of eye disorders). The data analysis was theoretical because the non-functional requirements were used as themes, and semantic because only the surface meanings of the data was analysed (as opposed to also analysing latent themes).

A second method, informed argument (Hevner et al., 2004, Table 2), explained in 3.2.2. Define Requirements, was used to, in particular, evaluate the requirements that were less associated with the perceptions of the participants.

3.2.5.1. Alternative Strategies and Methods

The chosen evaluation strategy was not optimal to obtain high validity of the results. A weakness of interviews with stakeholders is that they risk contributing to false positives since participants tend to appear agreeable with the interviewing researcher (Johannesson & Perjons, 2014, p. 144).

If more time would have been available, an alternative form of evaluation could have been ex post and naturalistic, performed after that a real human rights group had decided to use OntoRights themselves for a real case database. As Johannesson & Perjons (2014, p. 139) argue, naturalistic evaluations can involve multiple stakeholders, which is particularly important for socio-technical artefacts. The research strategy would again have been case study, and the method semi-structured interviews. However, finding an appropriate organisation before the deadline of the thesis was considered unfeasible.

Another approach would have entailed additionally evaluating the non-functional requirements one-by-one. For example, the completeness requirement could have been tested with an experiment strategy (Denscombe, 2010, p. 65), in which the use of the artefact versus the use of an organisation's existing database would have been the independent variable, and the number of statements in real narrative human rights reports that could be formally expressed would be the dependant variable. Experiments for evaluating ontologies have been used earlier in the humanitarian domain by Apisakmontri et al. (2016).

3.3. Research Ethics

According to Denscombe (2010), there are four basic principles that social researchers should follow. The first principle, that *participants' interests should be protected,* is the most relevant for this thesis. In many parts of the world, human rights work is met by violence and repression. Any contact with

human rights defenders should be made through sufficiently secure channels, and the information that participants disclose in interviews and questionnaires must be protected. Also, as no system is totally secure, when designing the questions a researcher should consider the risk that the information falls into the wrong hands .

The practitioners were offered to participate in the participant survey through the same channels that they usually receive less sensitive communications from HURIDOCS. The survey tool of Stockholm University was used for the questionnaire, which avoided the need to disclose research data to third parties. For the continued dialogue the participants were offered different end-to-end encrypted channels.

It must be acknowledged that information about the conceptual model of a human rights groups case database could be of interest to an adversary to understand how the organisation works. On the other hand, no information about IT security or sensitive information about people will be discussed. More on this is discussed regarding a particular case in 6.1. Demonstration.

The second principle is that *participation should be voluntary and based on informed consent*. The research was presented and written consent was obtained in both the participant survey and the interviews during the demonstration and evaluation activities.

The third principle is that *researchers should operate in an open and honest manner with respect to the investigation*. This is considered covered through the consent form. Also, a simple web site was designed to present the project.[8]

The fourth principle is that *research should comply with the laws of the land*, which it does.

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[8] The website can be accessed at https://joranl.github.io/human-rights-ontology/

4. Problem and Requirements

4.1. Explicate Problem

As stated in 3.2.1. Explicate Problem, this activity is not the focus of this thesis. The research strategy was a case study of HURIDOCS, the data collection method was unstructured interviews, and no particular data analysis method was used. Note that also the choice of HURIDOCS as case was presented in 3.2.1. Explicate Problem.

4.1.1. Application of Data Collection Method: Unstructured Interviews

Different constellations of HURIDOCS' Knowledge Collaboration Team of three people were interviewed twice through video link in October and November of 2021, with the author taking notes, as recommended by Dencombe (2010, p. 187). This team was the natural conversation partner, since it had been responsible for developing the Community Resource for database modelling mentioned in 1.1. Problem. The interviews lead to an agreement about the problem to address in the thesis, namely that human rights groups lack ontologies to support their conceptual data modelling, as has been explicated in 1.1. Problem.

4.2. Define Requirements

4.2.1. Non-functional Requirements

As stated in 3.2.2. Define Requirements, the research strategy for the non-functional requirements was a case study of HURIDOCS, the data collection method for defining preliminary requirements was unstructured interviews, and the preliminary requirements were further developed through informed argument.

4.2.1.1. Application of Data Collection Method: Unstructured Interviews

The preliminary non-functional requirements were defined with HURIDOCS' Knowledge Collaboration Team in two unstructured video calls during which the author took notes. This team was the natural conversation partner also for these interviews and for the same reason as during the explicate problem activity. One interview was in November 2021 with the complete team, and the other one was in January 2022 with only the Knowledge Collaboration Lead.

The concluded preliminary non-functional requirements was that the ontology:

1. Should be adaptable, i.e. modelled in a format that make collaboration and changes easy.
2. Should be extendable, i.e. have a stand-alone nucleus of "who-did-what-to-whom", that can be completed with predefined modules.
3. Should leverage and connect to already-existing ontologies/taxonomies/datasets.

4.2.1.2. Application of Method: Informed Argument

As argued in 3.2.2. Define Requirements, the preliminary requirements were further developed through informed argument with the support of a socio-technical Information Infrastructures (II) design theory by Hanseth & Lyytinen (2010) explained in 2.5. Information Infrastructures Design Theory.

An ontology, together with its users and related IT solutions, form an II, and the identified tension between the two II problems resulted relevant for OntoRights. The implications of the II bootstrap problem is that OntoRights must be useful for, and used by, small human rights groups for developing case databases. This is close to the stated research goal of this thesis. However, the II adaptability problem requires additionally designing OntoRights so that it can evolve and survive in the long run, and in the future be used also for system integration, machine learning, and semantic web applications. If not, another domain ontology with higher adaptability will probably eventually be designed and replace OntoRights. How this design theory further informed each non-functional requirement is argued in the results section below.

4.2.1.3. Results of Non-functional Requirements

Many generic, partly overlapping, qualities can be used to describe IT artefacts, including ontologies (Johannesson & Perjons, 2014, pp. 109-111). A number of non-functional requirements were identified for OntoRights.

Usage Qualities

Usage qualities relate to how the artefact is perceived by the user.

Requirement 1: *The ontology should have high usefulness for human rights groups doing conceptual modelling*
Perceived *usefulness*, as defined in the Technology Acceptance Model (TAM), is "the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989, p. 320). According to Design Rule 1 of IIs, "a small user population needs to be identified and targeted" (Hanseth & Lyytinen, 2010, p. 8) and "the proposed IT capability has to offer the group *immediate* and *direct* benefits" (Hanseth & Lyytinen, 2010, p. 8). As already stated, human rights groups doing conceptual modelling is the primary target group of the ontology.

Requirement 2: *The ontology should have high ease of use for human rights groups doing conceptual modelling*
Perceived *ease of use* is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). According to Principle 1 of IIs, "the IT capability to-be-adopted must be simple, cheap and easy to learn". Moreover, there is a risk that new technological solutions will make human rights defenders direct too much of their scarce resources to develop these solutions instead of their core mission, a risk that has been coined "technological solutionism" (Aronson & Land, 2018, p. 13).

Structural Qualities

Requirement 3: *The ontology should have high customizability*
Customizability is "the degree to which an artefact can be adapted to the specific needs of a local practice or user" (Johannesson & Perjons, 2014, p. 110). Human rights groups have many different needs depending on their resources and thematic areas, as has been highlighted by HURIDOCS. Also,

as argued by Hanseth & Lyytinen (2010, p. 7), variety leads to evolution. This requirement also relates back to Requirement 1.

Requirement 4: *The ontology should have high modularity*
Modularity is "the degree to which an artefact is divided into components that may be separated and recombined" (Johannesson & Perjons, 2014, p. 109). Principle 5 of IIs promotes modularity, i.e. OntoRights should not aim to be a complete and controllable system. Human rights violations documentation can be understood as an intersection of other domains, such as events, law, and social networks, including dimensions as time and location. This is an argument for preferring less-than-perfect alignments with existing ontologies rather than aiming for high completeness of OntoRights as a stand-alone artefact. Mapping to existing ontologies furthermore relates to Principle 2 of IIs (Draw upon existing installed base). Modularity is also a means to an end, in order to achieve Requirement 3 (customizability).

Requirement 5: *The ontology should have high completeness*
Completeness is "the degree to which an artefact includes all components required for addressing the problem for which it has been created" (Johannesson & Perjons, 2014, p. 111). Just as Requirement 4 (modularity), this relates back to Requirement 3 and the highly different needs among human rights groups. Ideally, the ontology should cover them all (identified in the Document Survey). In practice, it should cover the most important (identified in the Practitioner Survey).

Management Qualities

Requirement 6: *The ontology should be made available with the most widely used relevant standards.*
Principle 2 of IIs, "promotes connections with the existing installed base". The OntoRights aims to create a bridge between two, so far rather separated, socio-technical systems: human rights violations documentation and ontology design. So far there has been little use of formal ontologies in human rights work (Guberek & Silva, 2014; Piracés, 2018; Aronson & Land, 2018; Poblet & Kolieb, 2018). The challenge will be less if the used standards, e.g. foundational ontology and language, already are familiar to as many as possible of the intended users. Using already-existing standards is also key for OntoRights to potentially also be used also for system integration, which relates to the IIs adaptability problem.

Requirement 7: *The ontology should be published with tools that are collaborative and open source*
According to Principle 3 of IIs, the number of users is in general more important for the value of an IIs than its functionality. New users can also find unexpected ways of using an artefact. This is an argument for using tools that are collaborative and open source. Furthermore, much of the general development of human rights technology has been in the open source sector (Guberek & Silva, 2014; Piracés, 2018, p. 294). Additionally, open source development promotes the above-mentioned "continuous, local innovation" foreseen by Hanseth & Lyytinen (2010, p. 16) and can in itself according to van Aardt (2005) be considered a CAS, which increases chances of survival .

4.2.2. Functional Requirements

As stated in 3.2.2.2. Functional Requirements, the functional requirements were researched in two steps. First, a Document Survey was done to obtain a comprehensive view of the domain. Second, a Practitioner Survey was conducted to be able to prioritise the most relevant parts of the domain.

4.2.2.1. Document Survey

As also stated in 3.2.2. Define Requirements, the exploratory Document Survey was done of authoritative manuals for human rights reporting, using purposive, cumulative sampling, to extract text fragments that expressed triples (subject-predicate-object), that in turn could be grouped into themes.

Application of Data Collection Method: Document Study

Since the manuals were available as pdf files they were edited with the document viewer Okular. Single words or phrases that included entities and relations, e.g. actions, that appeared distinctive for the domain of human rights violations documentation were marked with Okular's highlighter tool.

The sample started with the several hundred pages long *Manual on Human Rights Monitoring* (2011) by the UN Human Rights agency. After relevant parts had been reviewed, the sample was extended to the 261 pages long HURIDOCS' Events Standard format (Dueck et al., 2001). The different sections in each manual were read in order to decide if they should be included in the analysis. In general, if the first page of a section did not render more markings, the rest of that section was not read. Much information relevant for the survey was repeated both within and between the manuals. Therefore, more markings were produced in the first manual than the second, and there was also more markings in the first parts of the manuals compared to the rest. Already after reviewing these two samples, the author made the judgement that code saturation had been reached, and no more samples were added. The concept of saturation comes from grounded theory, but is also used in a broader sense. According to Guest et al. (2020, p. 2): "In this broader sense, saturation is often described as the point in data collection and analysis when new incoming data produces little or no new information to address the research question". Hennink et al. (2017) differentiates between code saturation and meaning saturation. While the former refers to identify the codes and is reached earlier, the latter refers to fully understand the identified issues.

Application of Data Analysis Method: Thematic Analysis

As stated in 3.2.2. Define Requirements, the data analysis method was a type of template thematic analysis (Brooks et al., 2015)

Step 1 was to get familiar with the data, which was an inherent part of the sampling process described above.

Step 2 was to extract and code the sections, sentences or clauses that contained markings. Potential extracts that was about process descriptions rather than information structures was excluded. Also expressions that did not seem sufficiently important for a human rights group to include even in a very sophisticated database were excluded. The included extracts were copied and pasted into a Google Spreadsheet and had codes in the form of triples assigned. Each text extract generated one or more codes. For instance, the extract, "... reinforce the State's responsibility to respect, protect and fulfil human rights", generated six codes. Some codes were latent, grounded in the author's prior knowledge of the domain, e.g. that a UN treaty is a subclass of an international treaty. The result was 193 extracts and 560 triples.

The Google Sheet was formatted in such a way that it generated a Kumu relationship map for visualisations and graph analysis. An alternative would have been to use a qualitative data analysis

software such as ATLAS.ti, but since this survey was the first step towards an ontology, a relationship map was considered more useful. A high-level overview of the result can be seen in Figure 3.

Step 3 was to enrich the triples by adding categories (types).Thereby the map became more understandable.

Figure 3

Document Survey Codes Represented as a Graph - Zoomed Out
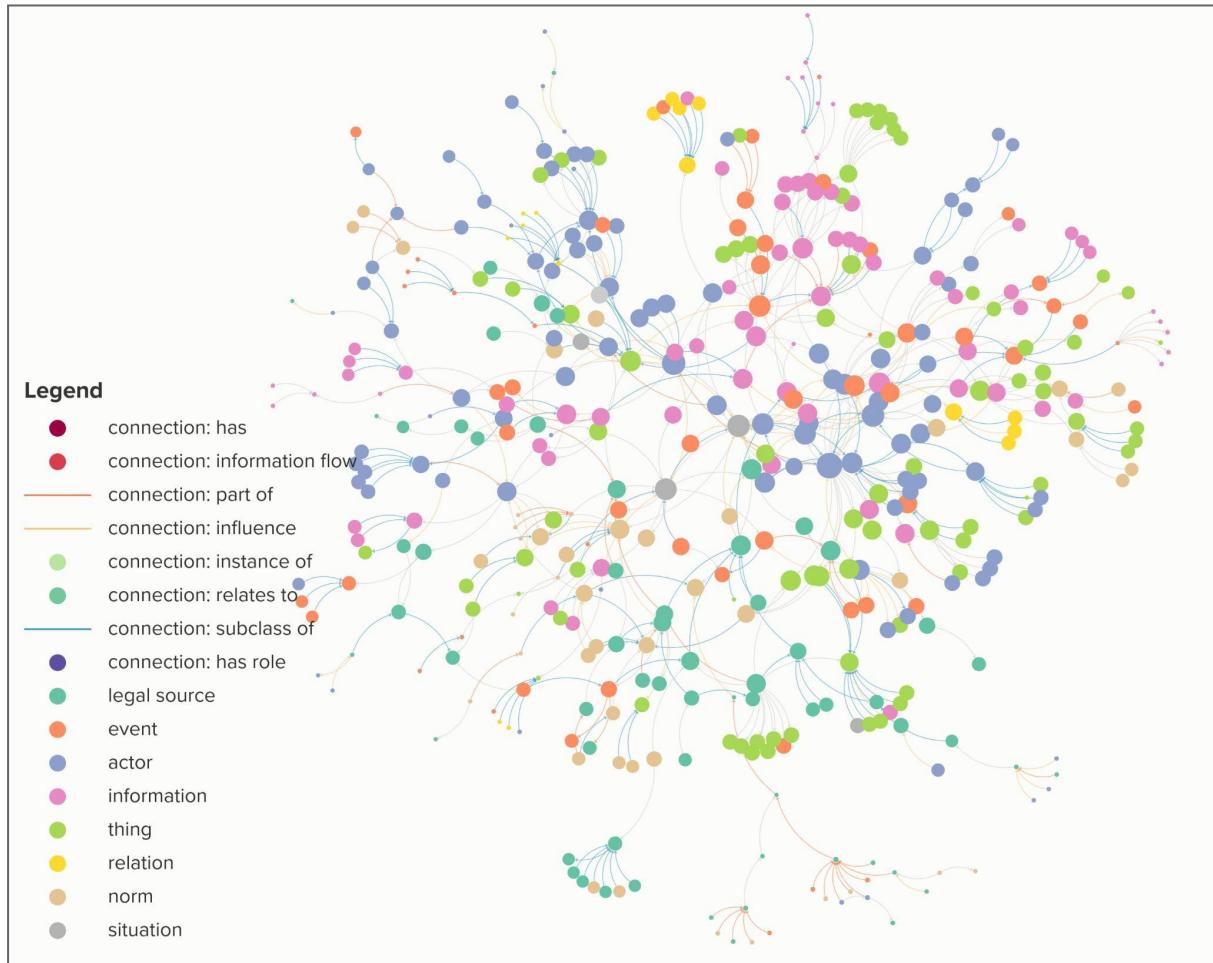
Note. The view is also available online.[9]

Another, zoomed-in, view of the same map is shown in Figure 4.

Figure 4

Document Survey Codes Represented as a Graph - Zoomed In
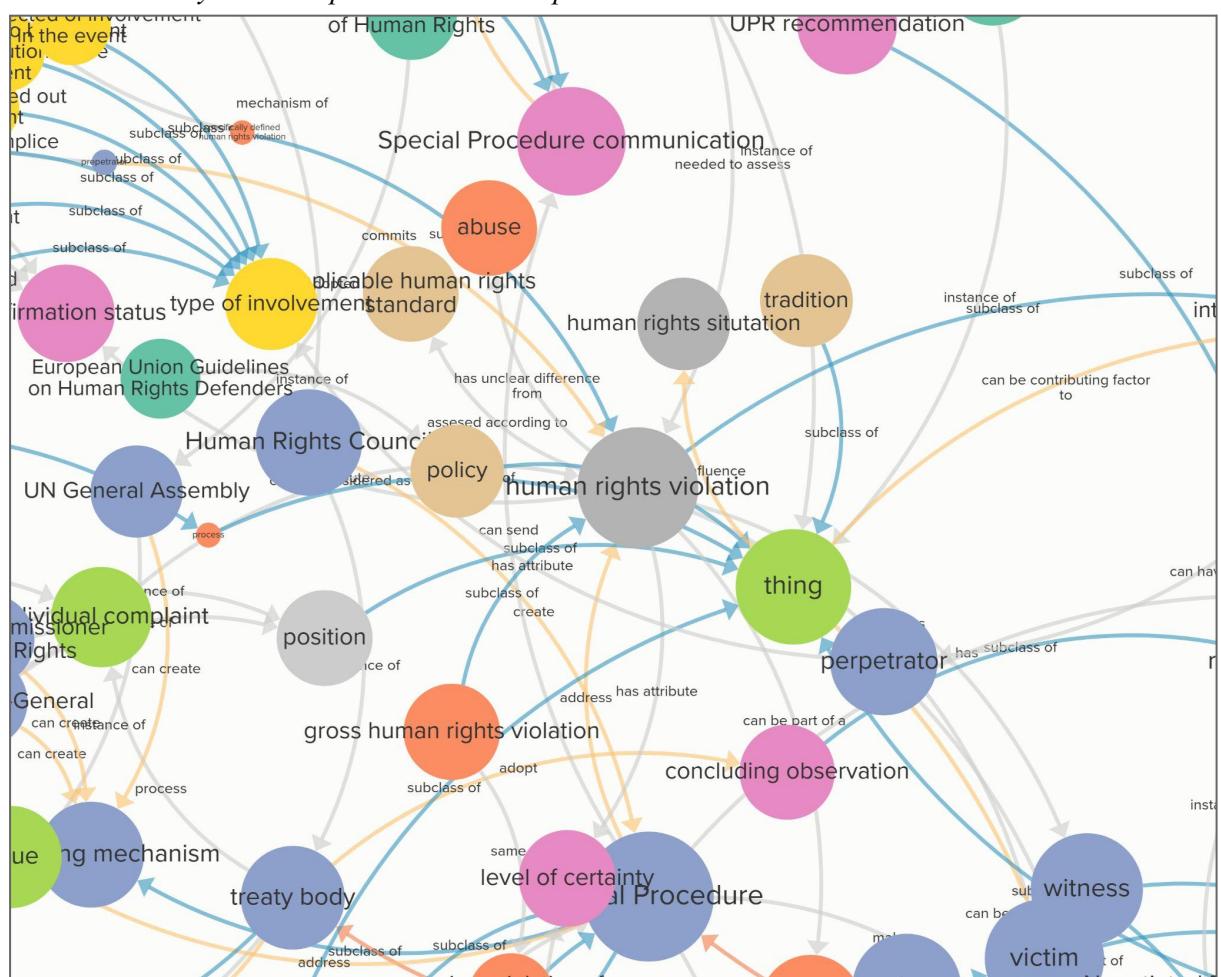
Note. The view is also available online.[10]

In step 4, the elements were sized according to their closeness centrality, i.e. the distance between an element to all other elements. The top ten elements with the highest closeness can be seen in Table 5.

Table 5

Top Ten Document Survey Elements According to Closeness Centrality

Ranking	Element	Ranking	Element
1	Person	6	Rights Holder
2	Special Procedure	7	Event
3	Actor	8	Victim
4	Human Rights Problem	9	Source of Factual Information
5	Human Rights Violation	10	Human Rights Practitioner

Step 5 was to design an initial theme template, for which having done steps 3-4 was helpful, even if not essential. In step 6, the triples were collated by assigning the defined themes (tags) to them. Simultaneously, the theme template was adjusted. Fith, the themes were grouped, which produced a thematic map with 25 themes, which in turn were grouped into 6 subdomains.

The above steps do not completely follow the guidelines of Brooks et al. (2015, p. 204). As stated in 3.2.2.2. Functional Requirements, these authors as well as Braun & Clarke (2019) recognize the flexibility of thematic analysis. One particular use of flexible analysis employed in this thesis was to code using triples. Another was the use of a Kumu relation map that is not mandated by Brooks el al. (2015). Additionally, template analysis commonly generates a thematic map with four or even more levels of sub-themes (Brooks et al., 2015, p. 206). However for his work, it was enought to use a flatter structure in the form of the Kumu map. In this sense, the result was closer to what is used to be produced by reflexive thematic analysis (Braun and Clarke, 2006).

Results of the Document Survey

The result of the grouping in the previous section is shown in Figure 5.

Figure 5

Thematic Map of the Human Rights Violations Documentation Domain
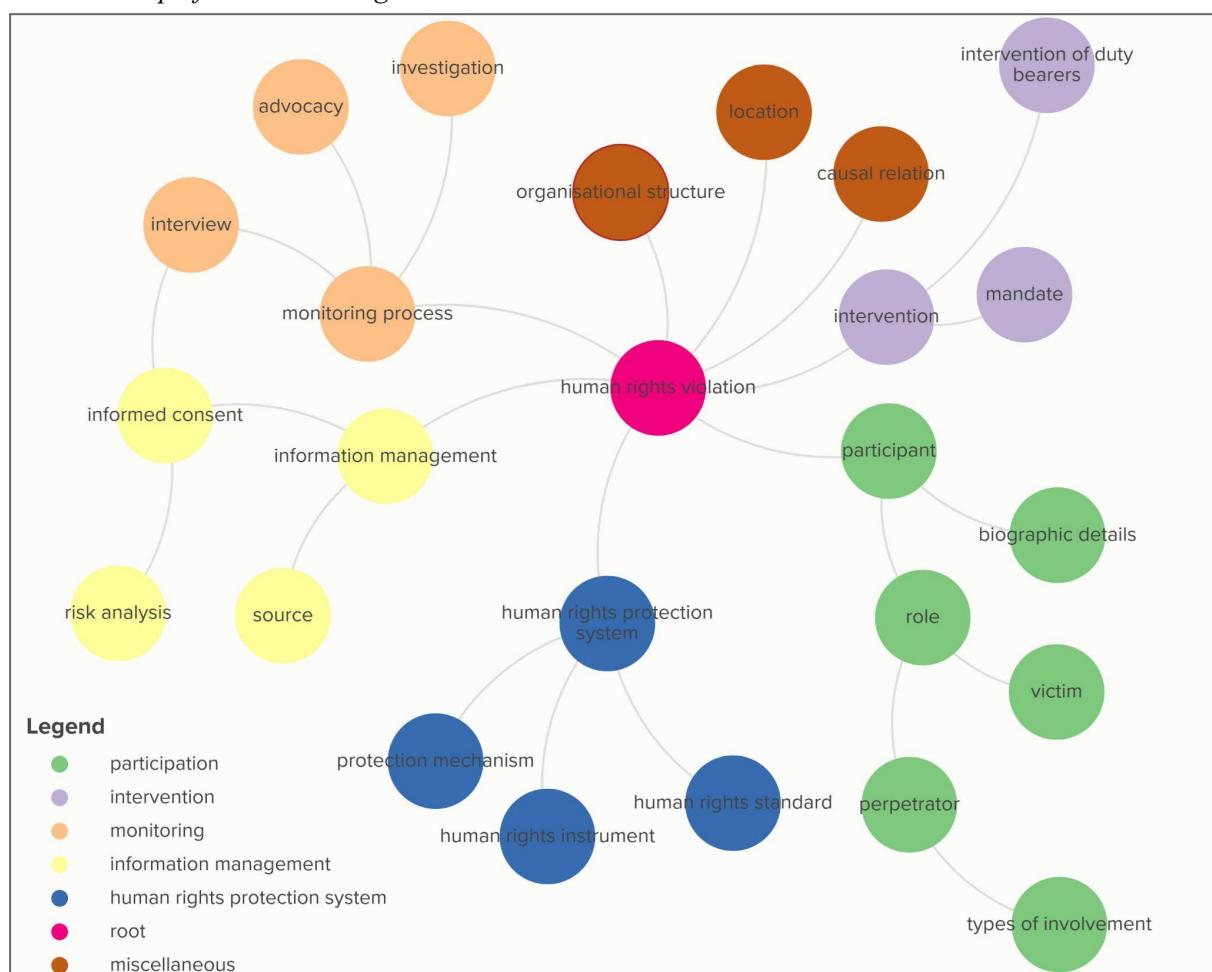
Note. The map shows 25 themes in 6 surrounding groupings. This map is also available online.[11]

This section seeks to summarise what an ontology about human rights violations documentation ideally should cover, which roughly corresponds to the six surrounding groupings of categories in Figure 5. (The miscellaneous grouping was broken up, and the naming was adjusted) They also include, at least implicitly, all elements with the highest closeness centrality in Table 5. Seven subdomain were identified.

1. Roles and People. A possible human rights violation often starts with a concrete event in which a perpetrator commits an action against a victim. In other words: *What happened - Who did what to whom?* This can also include: where, when, why and how.

2. Relations Between Events. An event can have sub-events, and that one event can have more than one super-events.

3. Interventions. When someone's rights have been abused, international human rights standards stipulate that state authorities have a legal obligation to intervene. It is often unclear when a case is finished, as events keep happening and information keeps coming. *What actions were taken in response - who did what?*

4. Human Rights Protection System. The findings should then be compared to applicable human rights standards to answer: *How is this a human rights problem - according to which legal norm?*

5. Monitoring Process. A human rights group that follows up a possible human rights violation is engaging in human rights monitoring. The objective is often dual: to know the facts and to intervene. *What did the human rights group do to investigate and intervene?*

6. Information Management. In order to present a convincing case, human rights groups must keep track of their sources and supporting documentation, identify original sources, and respect the different levels of confidentiality for each piece of information. *How did the human rights group get its information, and how is it allowed to use it?*

7. Organisational Structures, Influence and Risk. Effective and responsible human rights monitoring requires an understanding of root causes and relations of power. *What are the forces at work that influence a situation?*

4.2.2.2. Practitioner Survey

The purpose of the Practitioner Survey was to understand which of the seven subdomains and respective categories identified in document study should be given priority during the design and develop artefact activity. As stated in 3.2.2.2. Functional Requirements, the research strategy was survey, the sampling was representative but with a pragmatic approach, the data collection method was a questionnaire, and the data analysis method was descriptive statistics.

Application of Data Collection Method: Questionnaire

The questionnaire, available in Annex III, was built with the survey tool of Stockholm University. One reason was to avoid having third parties accessing the potentially sensitive disclosed data. This relates to protecting the interests of the participants, which is the first key principle of research ethics according to Denscombe (2010, p. 331). Confidentiality is always at risk when using online tools, and doubts about confidentiality issues can also deter potential participants (Wright (2019, p. 1343).

Participants that volunteered for further contact could choose between being contacted through ordinary email or different encrypted channels. The questionnaire was written in English and translated to Spanish. The translation was done by the author and then proof-read by a native Spanish speaker. The questionnaire contained 25 questions grouped according to the 7 subdomains identified in the previous section. It also included background questions about the participants, such as years of experience and geographic focus. The questionnaire asked the participants to:

1. Imagine that their organisation was developing a new database for managing their documented cases of human rights violations.
2. According to perceived importance, do an ordinal categorisation of the identified themes. The questions started with "How important is it that your database can express..."
3. Perform a ranking of the subdomains.

As stated in Part III, the research population for the Practitioner Survey includes human rights groups with interest in database design. There are arguably thousands of such groups.[12] Three sampling frames (Denscombe, 2010, pp. 25-27) were used:

A. The email addresses of 29 contact points in human rights groups that had given inputs to HURIDOCS' new Community Resource.
B. The email addresses of 19 capacity builders who also had contributed to the Community Resource mentioned in 1.1. Problem. Around 12 of them were HURIDOCS staff.
C. An informal WhatsApp group with about 250 recipients, of which most are human rights groups in Latin America.

Links to the questionnaire were distributed by HURIDOCS during 4-26 April 2022. Some people from sampling frame A were excluded by HURIDOCS in order to not overload them with too many surveys (other surveys to most of them had to be sent by HURIDOCS during the same period of time), leaving around 21 that received the questionnaire. The recipients were encouraged to also forward the questionnaire to peers, i.e. the method application also had elements of snowball sampling (Denscombe, 2010, p. 37). From sampling frame B, everyone was included. Also from sample frame C all participants were included, but judging from the submissions' background information, none or few participants were generated from this sampling frame.

Apart from its small size and use of the English language, there are no particular reasons to believe that Sampling A or B are biassed in terms of e.g. thematic or geographic focus. Sampling Frame C obviously included Spanish speakers in Latin America, and had a focus on migratory issues.

Application of Data Analysis Method: Descriptive Statistics

The results were exported from the survey tool as an xlsx-file. Then, descriptive statistical calculations were done in a LibreOffice Calc spreadsheet, including (a) make a frequency table, (b) calculate a weighted mean for each subdomain (see Annex IV for details), and (c) calculate median and mode for each question.

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[12] Just as an example, the International Federation for Human Rights (FIDH) has 192 member organisations, of which 4 are Colombian. In Colombia, one of the national federations for human rights (MOVICE), gathers around 200 groups, of which 12 are part of a central committe.

Results of the Practitioner Survey

In total, 13 participants submitted the form, of which 3 in Spanish. Everyone had experience (all but one at least two years) from working with human rights violations documentation, in particular from managing information from field work in a database. Their aggregated experience covered all seven parts of the world that could be selected in the form, with some extra weight on Northern Africa and Middle East, and Latin America and the Caribbean. Common focus areas of the participants included e.g. protection of human rights defenders, persons deprived of liberty, and migrants.

The coarse-grained results (according to the 7 subdomain) from the Practitioner Survey can be seen in Table 6. More detailed results (according to the 25 questions) are available in Annex IV. Two calculation methods were used to triangulate the relative importance of each subdomain, with rather concurring results. Perhaps surprisingly, information management scored high. In general, the participant rated the questions as important or very important. This was also the median value for all questions but one, which was about loose organisational structures such as networks and supply chains. The only question that all participants rated as very important concerned the roles of the participants in a possible human rights violation.

Table 6

Coarse-grained Participant Survey Results

Subdomain	Weighted mean of Number of 'Very Important' + 'Important'	Calculated Total Ranking
6. Information Management	12.5	2
1. Roles and People	11.6	1
4. Human Rights Protection System	10.8	4
5. Monitoring Process	9.5	3
3. Interventions (Remedy by the State)	9.3	6
2. Relations Between Events	7.0	5
7. Organisational Structures, Influence, and Risk	6.8	7

Note. In the second column, high number equals high importance, and the number 13 is the theoretical maximum, since there were 13 participants. In the third column, low numbers equals high importance. More details about the calculations behind can be found in Annex IV.

The requirements for an ontology can be expressed in the form of competency questions (Noy & Mcguinness, 2001, p. 5). The questions in the participant survey (see again Annex IV) also serve as competency questions for the design of the ontology. In summary, 25 competency questions were identified, grouped and ranked according to 7 subdomains.

5. The Artefact

The artefact consists of three parts: Full OntoRights, Simple OntoRights, and Manual for using Simple OntoRights for database design. Full OntoRights extends a foundational and core ontology, which is particularly important for non-functional requirement 6 (to build upon widely used relevant standards). Full OntoRights was converted into Simple OntoRights to satisfy non-functional requirement 2 (ease of use).

In Design Science Research (DSR) artefacts can be classified according to a number of dimensions (Johannesson & Perjons, 2014, p. 29). Table 7 provides an overview of the classifications of OntoRights.

Table 7

DSR Artefact Classification

Dimension	OntoRights Classification
Type of knowledge (Gregor & Hevner, 2013, p. 344)	Prescriptive
Type of artefact (Offermann et al., 2010, Figure 4)	System design
Type of artefact (Johannesson & Perjons, 2014, p. 29)	Model
Research outputs (March & Smith, 1995, p. 256; Hevner et al. 2004, p. 77)	Model

As described in 2.3. Ontology, ontology design requires choices regarding foundational and core ontology, ontology language and ontology tool. For the construction of OntoRights, UFO was chosen as a foundational ontology, and UFO-L was used as a core ontology. As mentioned, UFO-L builds on Alexy's Theory of Constitutional Rights, which is more suited than Positive Theory for expressing human rights problems. Moreover, UFO has successfully been used to design an ontology in the humanitarian area (Khantong & Ahmad, 2020) which is related to the human rights domain. OntoUML was chosen as language, and the OntoUML Visual Paradigm plugin was selected as a tool.

Table 8

Design Platform for OntoRights

Dimension	Choice for OntoRights	Author
Foundational ontology	UFO	Guizzardi et al., 2013
Core ontology	UFO-L	Griffo, 2018
Language	OntoUML	Guizzardi et al., 2021b
Tool	OntoUML Visual	Fonseca et al., 2021

	Paradigm Plugin[13]	

A slightly different composition would have been to, like Khantong & Ahmad (2020) use OWL as language instead of OntoUML. However, even if OntoUML is much less used than OWL, it has the benefit of being an extension of UML, which is used for relational database modelling and by far more used than OWL. Recall the importance of drawing upon existing installed base (Hanseth & Lyytinen (2010). A completely different composition that was considered included LKIF Core as core ontology, which can be considered a more mature alternative to UFO-L. LKIF Core is represented in OWL-DL and the natural choice of tool would have been the widely used Protegé. However, as explained previously, LKIF Core lacks foundational ontology and is based on legal Positive Theory.

5.1. Full OntoRights

In this section, both the development process and the finished artefact of Full OntoRights are described.

5.1.1. Full OntoRights Overview

As stated previously, a non-functional requirement of the ontology was to have it modularized. Therefore, the subdomains identified in previous sections provide the base for ontology modules.

There is no complete overlap between the subdomains identified during the define requirements activity and the modules below, for two reasons. First, the structures of UFO and UFO-L sometimes made it more logical to adjust the partitions. Second, in order to achieve high modularisation, sometimes even smaller modules could be designed.

Table 9
Relations Between Subdomains and Modules

Subdomain	Module
1. Roles and People	2. Human Rights Violation
	4. Actions and Consequences
	5. Consequences for Agent
	6. Natural Person
	7. Agent Categories
	8. Social Agents
2. Relations Between Events	3. Events
3. Interventions (Remedy by the State)	16. Legal Process

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[13] https://github.com/OntoUML/ontouml-vp-plugin; https://www.visual-paradigm.com/download/community.jsp

4. Human Rights Protection System	1. Human Rights Problem
	13. Human Rights Protection System
5. Monitoring Process	14. Monitoring Process
6. Information Management	15. Information Management
7. Organisational Structures, Influence, and Risk	9. Organisations
	10. Places
	11. Detention Centres
	12. Networks

Note. There is not always a perfect correspondence between subdomains and modules. For example, also subdomain "3. Interventions" relate to "Module 5. Consequences for Agent" (not only subdomain "1. Roles and People".

Note that the modules are fragments (diagrams) of one single ontology. An overview of the modules is shown in Figure 6.

Figure 6

Full OntoRights Modules as a UML Package Diagram
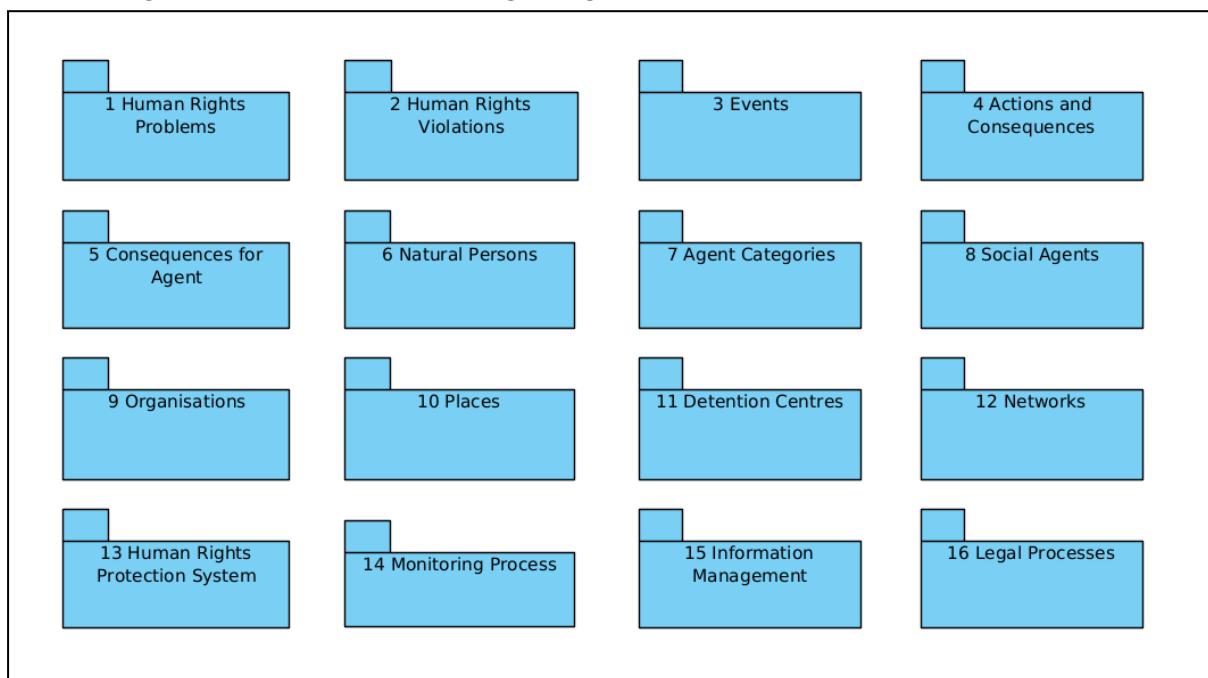
An alternative view of the modules is shown as a Kumu relationship map in Figure 7. As shown by the arrows, the modules are highly interconnected through shared classes.

Figure 7

Full OntoRights Modules with Shared Classes
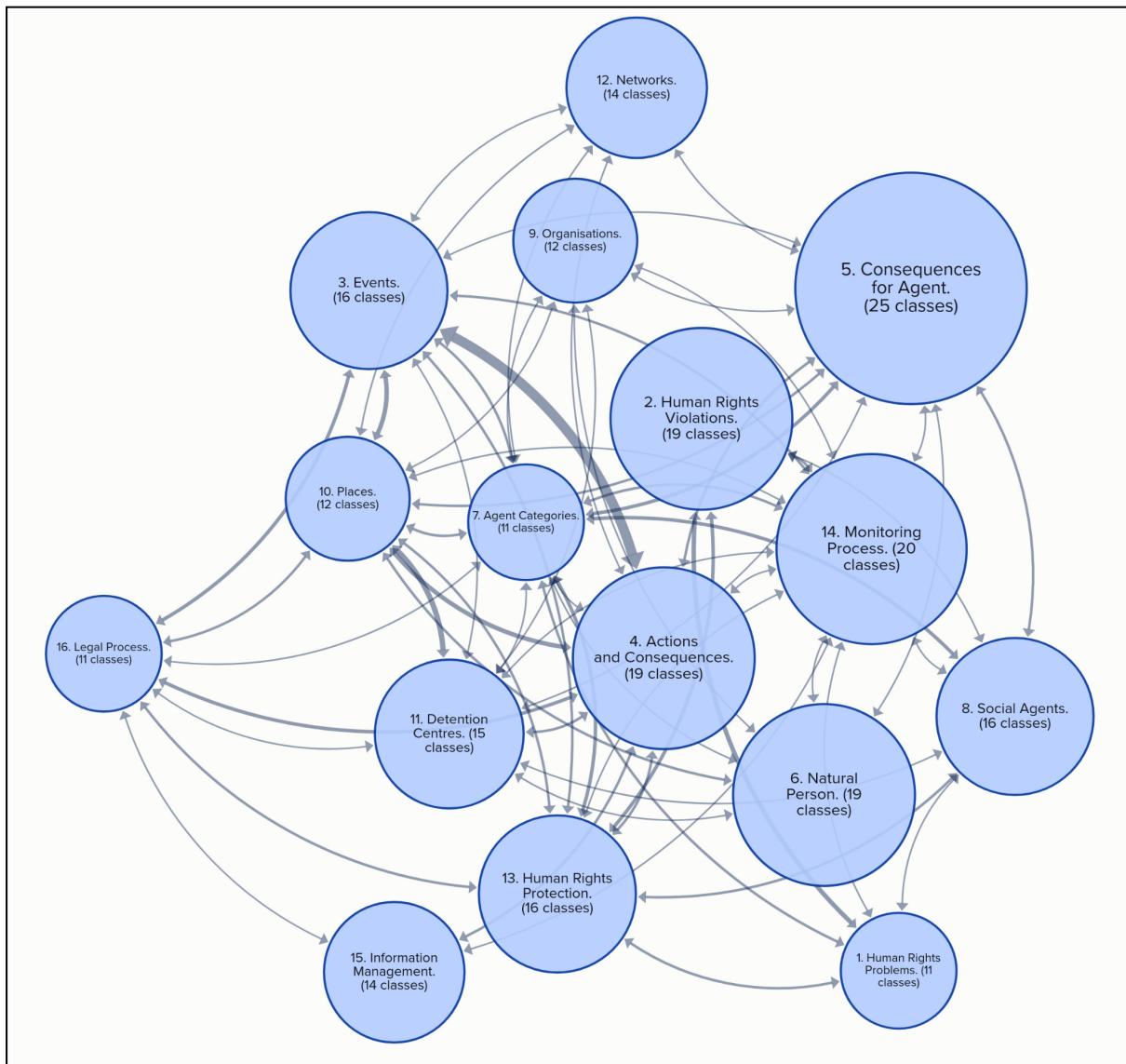
Note. An interactive version is available online.[14] An arrow between two modules indicates shared classes. The thinnest arrows represent only one shared class. The thickest arrow, between Module 3 and Module 4, represent 10 shared classes. In the centre of the diagram there are two large and important modules: Module 2 and Module 4.

5.1.2. Full OntoRights Development Process

Step 1 of Ontology Development 101 is to determine the domain and scope of the ontology. This was done during the requirements elicitation activity. The domain is human rights violations documentation. The scope is broad, given the many aspects of this domain. The primary purpose is to facilitate modelling of case databases for human rights groups.

Step 2 is to consider reusing existing ontologies. As mentioned, UFO was selected as foundational ontology and UFO-L was used as a core ontology. Table 10 shows the existing ontologies and other

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[14] https://www.kumu.io/joran/human-rights-ontology-module-overview

sources that to varying extent informed the design. These resources span from formal ontologies to datasets and guidelines.

Table 10

Ontology Reuse

Subdomain	Ontology/Other Sources
Human rights violation	UFO-L, a legal core ontology (Griffo, 2018).
Organisations	E-OPL, Enterprise Core Ontology (Falbo et al., 2014, Figure 4) The Organization Ontology (Reynolds, 2014)
Events	UFO-C (*Ufes*, 2017), a part of UFO. The Core Ontology on Decision Making (Guizzardi et al., 2020)
Crimes	OntoCrime (Mário de Oliveira Rodrigues et al., 2020)
Location	Geonames (*GeoNames*, n.d.), a geographical global database which contains over eleven million place names. The geographical categories from the United Nations Statistics Division (*UNSD — Methodology*, n.d.).
Human Rights Protection System	UFO-L. The Universal Human Rights Index of the United Nations (*UHRI*, n.d.).
Information management	Longwood Research Data Management (*RDM Resources Data Management*, n.d.). Only used as a source of inspiration.
Roles and People	HURIDOCS Events Standard (Dueck et al., 2001).

Steps 3-6 of the 101 methodology, e.g. defining class hierarchy, and defining cardinality, were not done as separate steps but were instead done iteratively using the OntoUML Visual Paradigm Plugin.

The OntoRights was designed as an extension of UFO and UFO-L superclasses. The matching was manual. Parts of the UFO based ontologies E-OPL and OntoCrime (see Table 10) were also reused. Unsuccessful attempts were made to find other core or domain UFO ontologies.[15] The informal ontologies and reference data served mostly as inspiration.

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[15] The search was mainly done in the OntoUML/UFO Catalog: https://github.com/unibz-core/ontouml-models

It should be mentioned that OntoUML Visual Paradigm Plugin can be considered a work-in-progress whose behaviour does not always correspond to the documentation of OntoUML (*Ontouml-Vp-Plugin Issue 134*, 2020; *Ontouml-Vp-Plugin Issue 135*, 2020).

5.1.3. Full OntoRights Description

The complete Full OntoRights, including interactive diagrams, can be accessed online.[16]

Figure 8

Full OntoRights Published as a Web Site
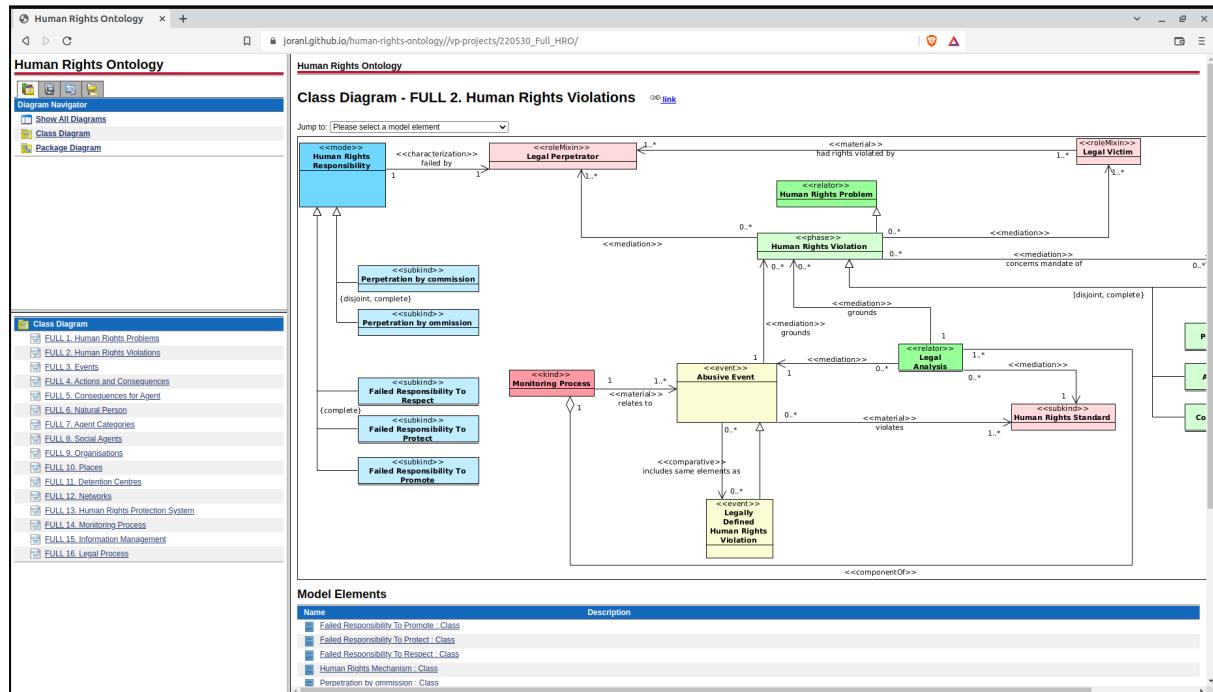
Note. The figure shows a screenshot of a module of Full OntoRights when accessed as a web site.

There are 198 classes in total. Classes that are reused from UFO (20 classes) or the UFO-aligned core ontologies UFO-L (10 classes) and E-OPL (9 classes) are indicated with prefixes. Since OntoRights was developed with the OntoUML Visual Paradigm Plugin, the classes are also marked with OntoUML stereotypes, as can be seen in Figure 9. OntoUML Visual Paradigm Plugin offers syntactical support and warns the designer if the stereotypes are misused. The OntoRights was designed without any syntactical warnings.

To fully understand the intricacies of OntoRights, the reader is recommended to consult the documentation of UFO (*UFO*, n.d.; Guizzardi et al., 2021a; Guizzardi et al., 2021b; *Ufes*, 2017) and OntoUML (*OntoUML Specification*, 2018), Griffo's doctoral thesis about UFO-L (2018), and the E-OPL Enterprise Core Ontology by Falbo et al. (2014). The diagrams are intended to be self-explanatory to a large extent, but will also be explained. Some classes of OntoRights appear in more than one module. In that case, Visual Paradigm marks the master view with an "M" and auxiliary views with an "a".

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[16] Version 1.0 of Full OntoRights can be accessed at
https://joranl.github.io/human-rights-ontology/vp-projects/Full_OntoRights_v1_0/

In UFO, it is common to model classes with more than one superclass. However, this has largely been avoided in OntoRights in order to increase its usability for case databases.

Some concepts, specific for human rights, are modelled as OntoRights subclasses without their own attributes or associations. This may appear redundant, but the point is to map concepts from the human rights domain to the UFO and UFO-L superclasses.

Note that in OntoUML, the Relator class can be used as an association class to represent the objectification of relational properties, modelled with its own associations stereotyped as <<mediation>>.

In UML there may optionally be a triangular arrowhead next to the name of the association to define its direction. This has not been done in OntoRights since the OntoUML stereotypes also show direction.

5.1.3.1. Full OntoRights Modules Description

The 16 modules of Full OntoRights are explained below.

1. Human Rights Problem

Figure 9

Full OntoRights Module 1: Human Rights Problem
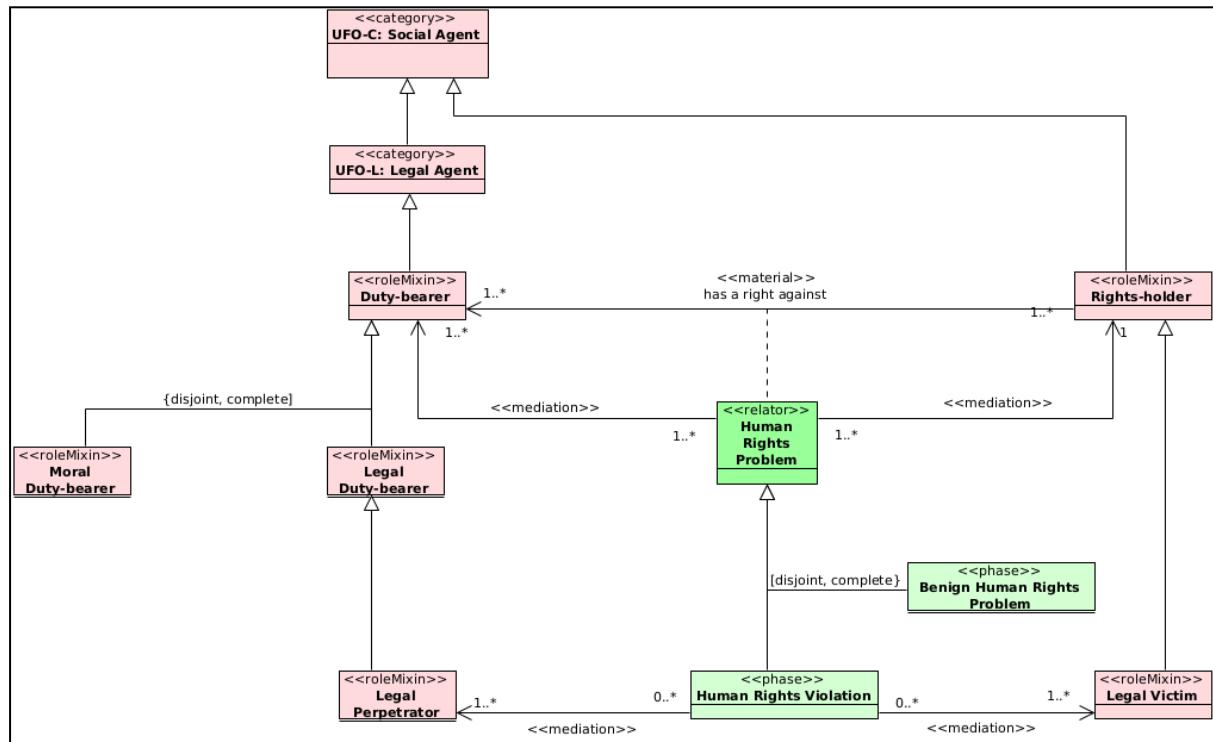
A **Human Rights Problem** is a wide term that can be understood as any situation that is relevant to analyse in human rights terms. In human rights lingo, duty-bearers have obligations towards rights holders. These obligations are normally legal, but also the notion of **Moral Duty-bearer** exists, i.e. a **Legal Agent** that is not bound by international human rights law to act in a certain way, but could be expected to, on moral grounds. One example could be a private company. A Human Rights Problem can be assumed to at one point be a **Benign Human Rights Problem**, but may turn into a **Human**

Rights Violation, which has at least one **Legal Perpetrator** and **Legal Victim**. Note that in particular the Legal Perpetrator is not necessarily the same actor that was the material perpetrator of an abusive event (see Module 4).

2. Human Right Violation

Figure 10

Full OntoRights Module 2: Human Rights Violations
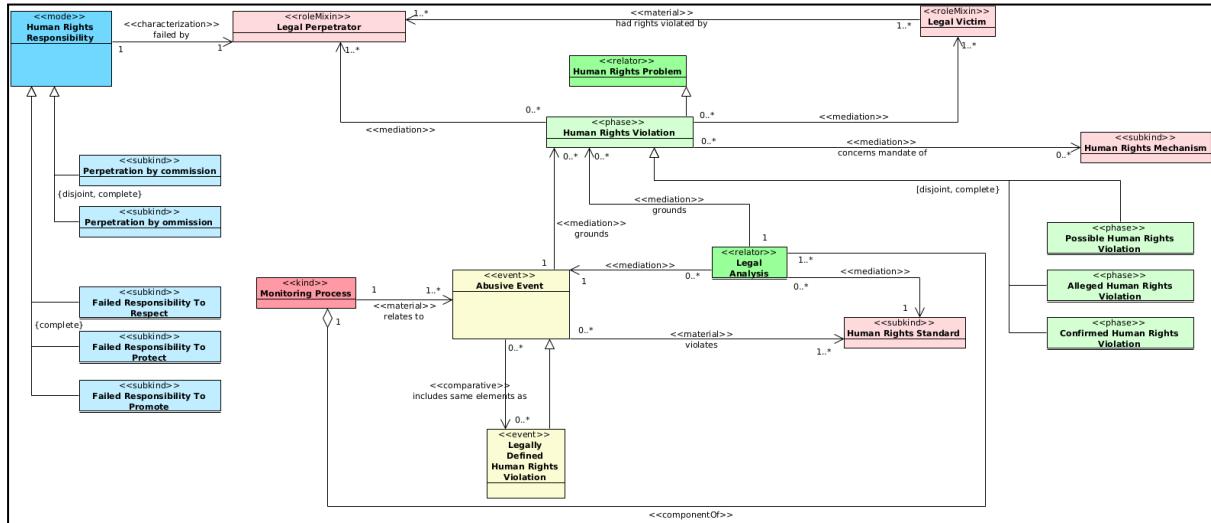
This module can be considered the core module of OntoRights. It includes many classes that are further developed in other modules.

A **Legal Perpetrator** has failed its **Human Rights Responsibility**. This can be of different types, i.e. how did the perpetrator do wrong from a legal point of view. A **Human Rights Violation** is grounded in a material **Abusive Event** that violates at least one **Human Rights Standard**, e.g. the right to life or the principle of proportionality in use of force. Some violations, e.g. torture and enforced disappearance, have their own definitions and are referred to as a **Legally Defined Human Rights Violation**. If an Abusive Event constitutes a Human Rights Violation or not must be decided through a **Legal Analysis** considering relevant Human Rights Standards. The Legal Analysis is done as part of a **Monitoring Process**. A Human Rights Violation can be considered to have different levels of certainty, either **Possible**, **Alleged**, or **Confirmed**. A Human Rights Violation can also be considered to concern the mandate of a particular **Human Rights Mechanism**.

3. Events

Figure 11

Full OntoRights Module 3: Events
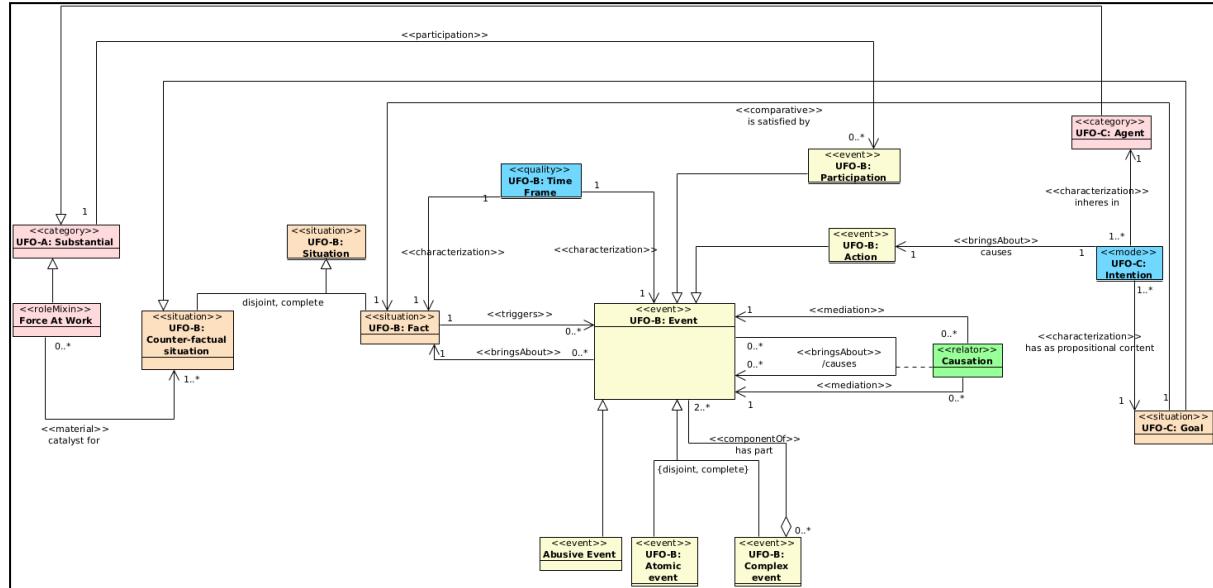
This module provides a general structure on which several of the other modules rely. It is almost entirely composed of elements from UFO-B and UFO-C. However, it is somewhat simplified compared to UFO: some concepts, irrelevant for OntoRights, have been removed.

An **Event** can be part of another Event. An Event can **cause** other Events. Here, UFO-B actually has different types of causes relations. One (not included here) is called directly causes and subsets causes. However, for the sake of usability, in OntoRights these different types are instead managed with the **Causation** class. An Event can also change a **Situation**. A **Situation** can be both a **Fact** (i.e. exist in reality) or be a **Counterfactual Situation**, such as a **Goal**.

> "A situation is a particular configuration of a part of reality which can be understood as a whole. Situations can be factual or counterfactual (e.g., the situation in which 'Al Gore is the president of the USA'). Factual situations are termed Facts [3]. Facts are situations which are said to obtain at particular time points." (Guizzardi et al., 2013, 3.4 World Changes and Situations)

An Event when an **Agent** acts with **Intention** is an **Action**. However, any **Substantial** (e.g. a chair) can have **Participation** in an Event (e.g. a chair that breaks). Note that the multiplicity only allows one single thing to be associated with one event. Therefore, if a chair breaks and the person sitting on it falls, this would be represented as two instances of **Atomic Event**, part of a **Complex Event**.

Finally, a **Force At Work** is any factor that increase or decrease the probability of a given Counterfactual Situation to eventually occur. Mapping Force At Work can be useful for understanding risks and when planning to achieve goals.

4. Actions and Consequences

Figure 12

Full OntoRights Module 4: Actions and Consequences
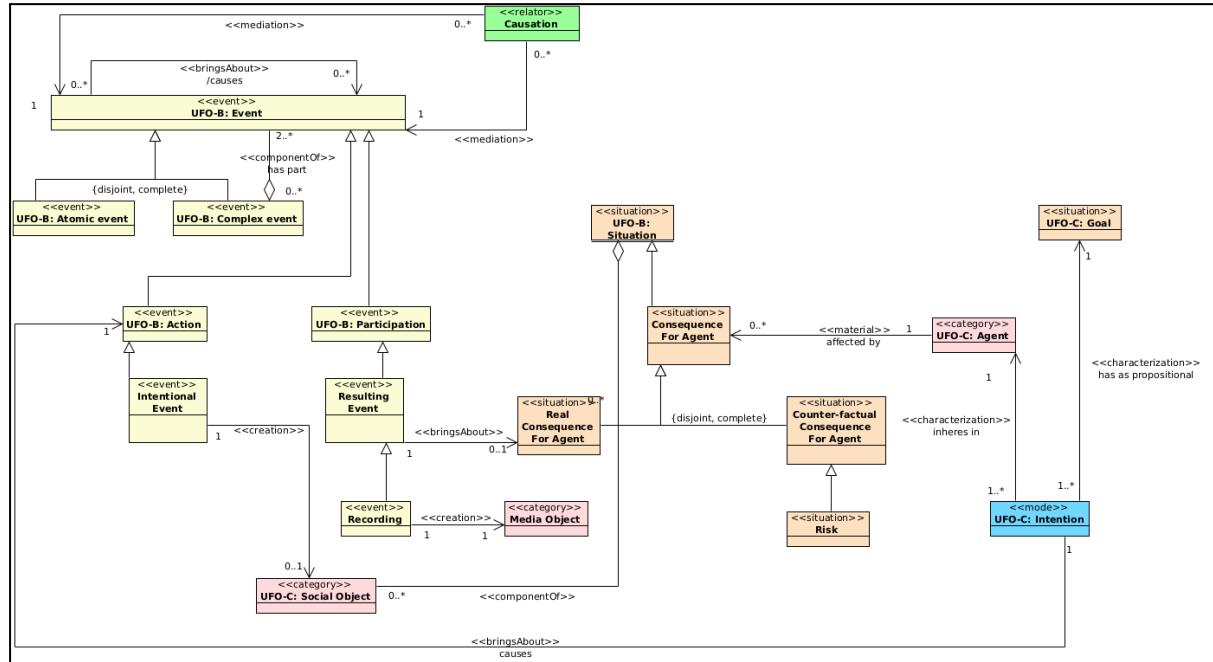
Human rights work is a never ending chain of events where abusive actions provoke interventions. This module extends the Events module to be able to express who did what to whom at a material level (as opposed to the legal implications of an event, see Module 2).

An **Intentional Event** can be either an abusive **UFO-B: Action** (e.g. hit someone) or an intervention (e.g. show public support of a victim)). It **causes** a **Resulting Event**. For example, a police officer that fires a teargas grenade into a crowd is one event, with many Resulting Events, as different people inhale the smoke. If a surveillance camera captures what happens, that would be a **Recording**, which creates a **Media File**. Any lasting effect of a Resulting Event on an **Agent** is a **Consequence For Agent**. A **Risk** is an undesirable **Counterfactual Consequence For Agent**. Note the multiplicity, that a Resulting Event has maximum one Real Consequence For Agent, which refers to exactly one Agent. Hence, a direct relation between Real Consequence For Agent and Agent would be redundant.

Note that there are no explicit roles. However, an Agent that participates in an Intentional Event which causes a Resulting Event with a negative Real Consequence For Agent would be equal to a material perpetrator, and the Agent that suffers a negative Real Consequence For Agent would be equal to a material victim.

5. Consequence for Agent

Figure 13

Full OntoRights Module 5: Consequence for Agent
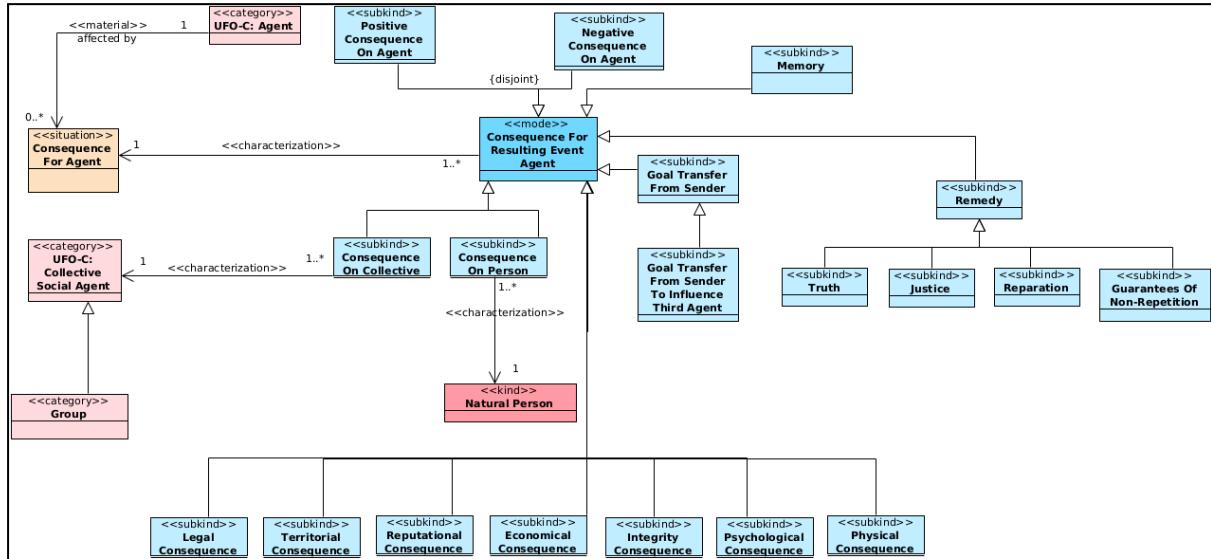
This module continues where Module 4 ends, and can express the many different types of lasting effects that an Agent can enjoy or suffer from a Resulting Event.

In OntoUML, <<mode>> is the stereotype used for intrinsic properties without structured values. The centre of the module is **Consequence For Resulting Event Agent**, that characterises either a **Collective Social Agent**, such as a **Group**, or a **Natural Person**. (Read more about the different agent categories in Module 7.) Consequence For Resulting Event Agent specialises into a number of subclasses. One is **Memory**, which represents the information stored in a mind or minds (known as collective memory in human rights terms). **Goal Transfer From Sender** and its subclass **Goal Transfer From Sender To Influence Third Agent** can be used to model for example advocacy campaigns.

Note that the **Legal Consequence**, **Territorial Consequence**, etc, are not disjoint, i.e. a consequence can be of more than one of these aspects.

6. Natural Person

Figure 14

Full OntoRights Module 6: Natural Person
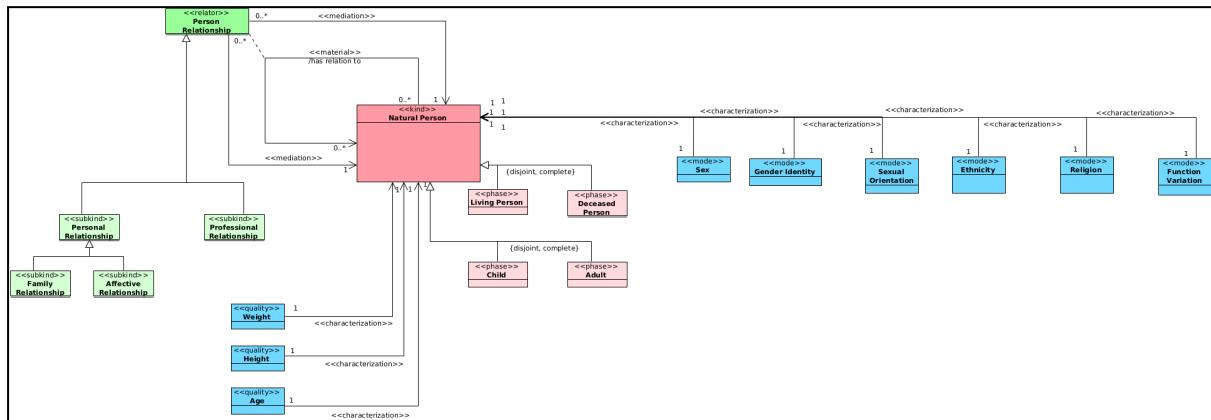
In OntoUML, the <<quality**>>** stereotype is used for intrinsic properties that unlike <<mode>> does have structured values. The <<phase**>>** stereotype is used to express subclasses that reflect changes in intrinsic properties.

A **Natural Person** can be described in great many ways. In human rights work, important characteristics include: those who can help identify a person, such as **Weight**; the legal distinction between **Child** and **Adult**; forbidden discrimination grounds, such as **Ethnicity**; and ultimatly the distinction between **Living** and **Deseaced**.

A **Person Relationship** can be of many different types, also simultaneously.

7. Agent Categories

Figure 15

Full OntoRights Module 7: Agent Categories
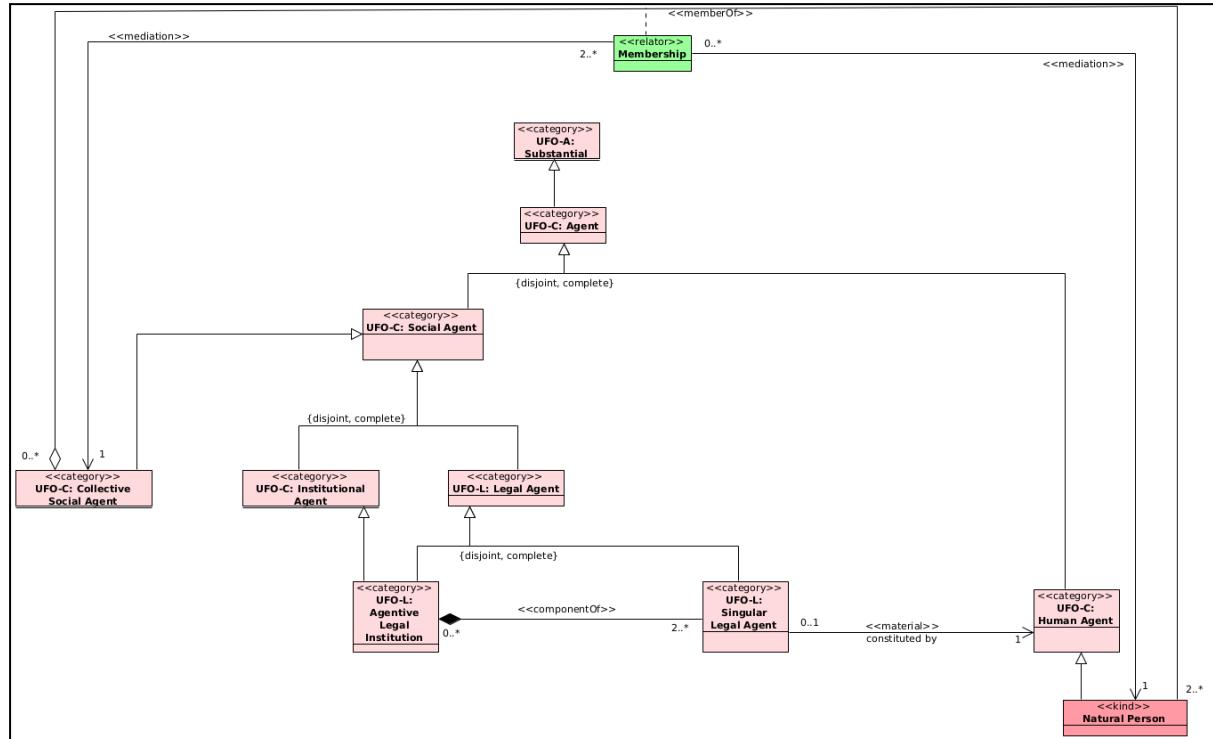
Like Module 3, the purpose of this module is to provide a general structure for other more specialised modules. In its centre are classes from UFO-C and UFO-L

An Agent has the disjoint subclasses **UFO-C: Social Agent** and **Human Agent**. A Human Agent is very close to its subclass **Natural Person** but not the same (Mário de Oliveira Rodrigues et al., 2020, Figure 5). Social Agent is specialised by UFO-L into **Legal Agent** that can carry rights and obligations, i.e includes both juridical (**Agentive Legal Institution**) and physical legal persons (**Singular Legal Agent**).

Note that according to UFO-L (Griffo, 2018, Figure 28), Agentive Legal Institution has two superclasses, which makes any database implementation more challenging.

8. Social Agents

Figure 16

Full OntoRights Module 8: Social Agents
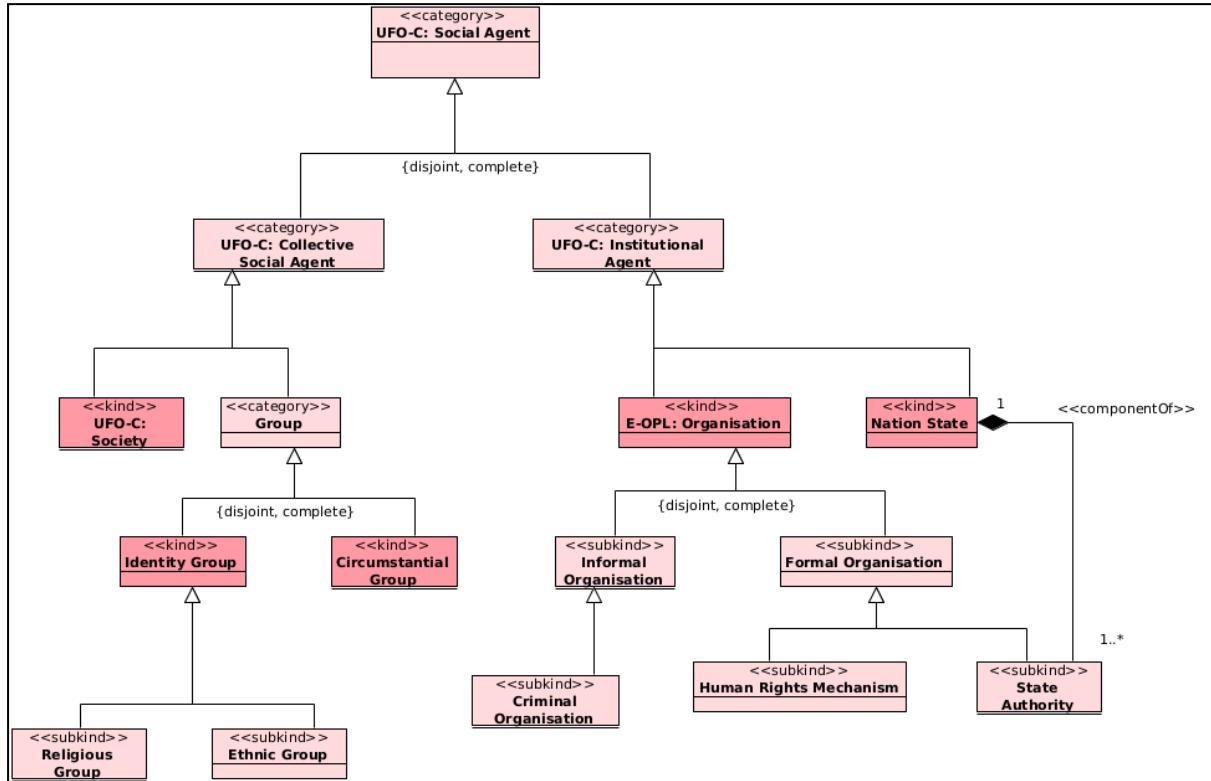
This module can be understood as an extension of Module 7, and breaks down the **UFO-C: Social Agent** category.

An **UFO-C: Institutional Agent** is a Social Agent that "are integral wholes formed by multiple agents playing different roles" (Almeida & Guizzardi, 2013, p. 260). A common type of institutional agent is **E-OPL: Organisation** (further explored in Module 9). A **Formal Organisation** is recognized by, for example, having an assigned identity number. **Human Rights Mechanism** is a formal organisation with a special mandate to promote human rights in a certain area. It can be either an international organisation or a **State Authority**.

The difference between **Identity Group** and **Circumstantial Group** is that while the former is an inherent part of an individual's identity and stable over time, the latter is related to particular contexts. **Religious Group** and **Ethnic Group** are example subclasses of Identity Group. Note that membership of for example a Religious Group could also be modelled as a <<mode>> of a Natural Person, see Module 6.

9. Organisations

Figure 17

Full OntoRights Module 9: Organisations
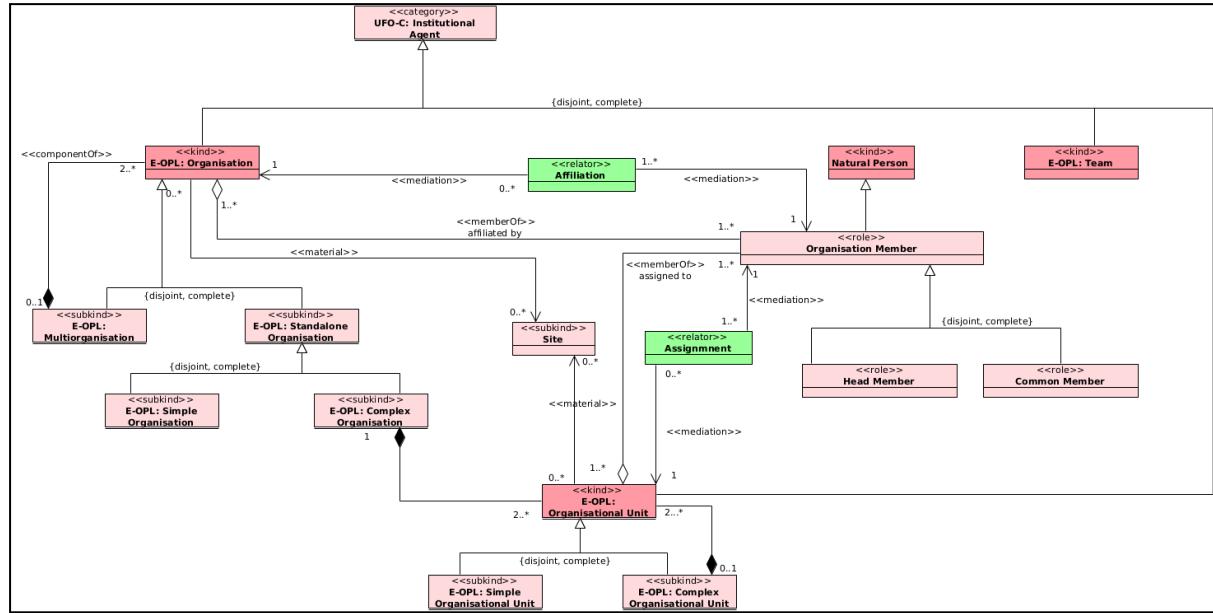
This module further defines organisations and largely builds on the Enterprise Core Ontology (E-OPL) designed by Falbo et al. (2014).

UFO-C: Institutional Agent is the superclass of **E-OPL: Organisation**, as well as **E-OPL: Organisational Unit**, and **E-OPL Team**. An Organisational Unit can be part of a **E-OPL: Complex Organisational Unit**. While an **E-OPL: Complex Organisation** has units, an **E-OPL: Simple Organisation** does not. An **E-OPL: Multiorganisation** is composed of other organisations, which can be either **E-OPL: Standalone Organisation** or other E-OPL: Multiorganisation. Both organisations and units can be related to **Sites** (read more about Site and **Place** below). Both organisations and units also have **Organisation Members** that can be either **Head Member** or **Common Member**.

An Organisation Member can have **Affiliation** (for example an employment) to an E-OPL: Organisation and also an **Assignment** to an E-OPL: Organisational Unit.

For more information about E-OPL Team, please refer to Falbo et al. (2014).

10. Places

Figure 18

Full OntoRights Module 10: Places
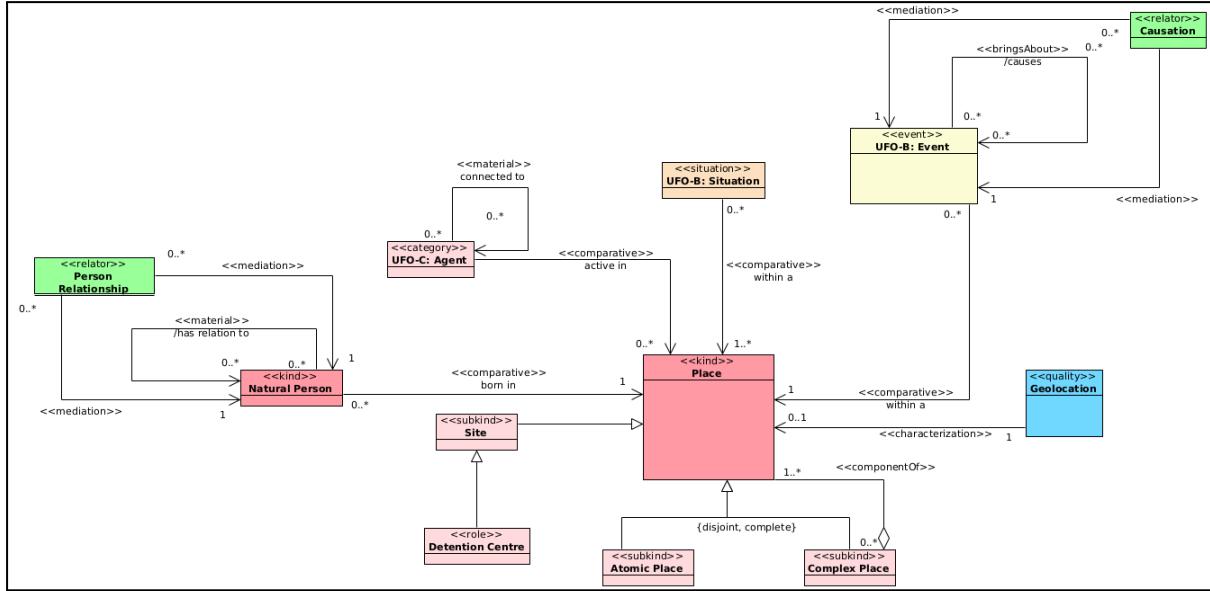
Both **UFO-B: Event** and **UFO-B: Situation** exist within a **Place** (if nothing else, on Planet Earth). A Place (often an administrative area such as the City of Stockholm) can be part of a **Complex Place**. A Place also has a **Geolocation**. A **Site** is a subclass of Place with clear physical limitations that has been constructed by humans for one or more specific purposes, for example a building. A site can function as for instance a **Detention Centre**.

11. Detention Centres

Figure 19

Full OntoRights Module 11: Detention Centres
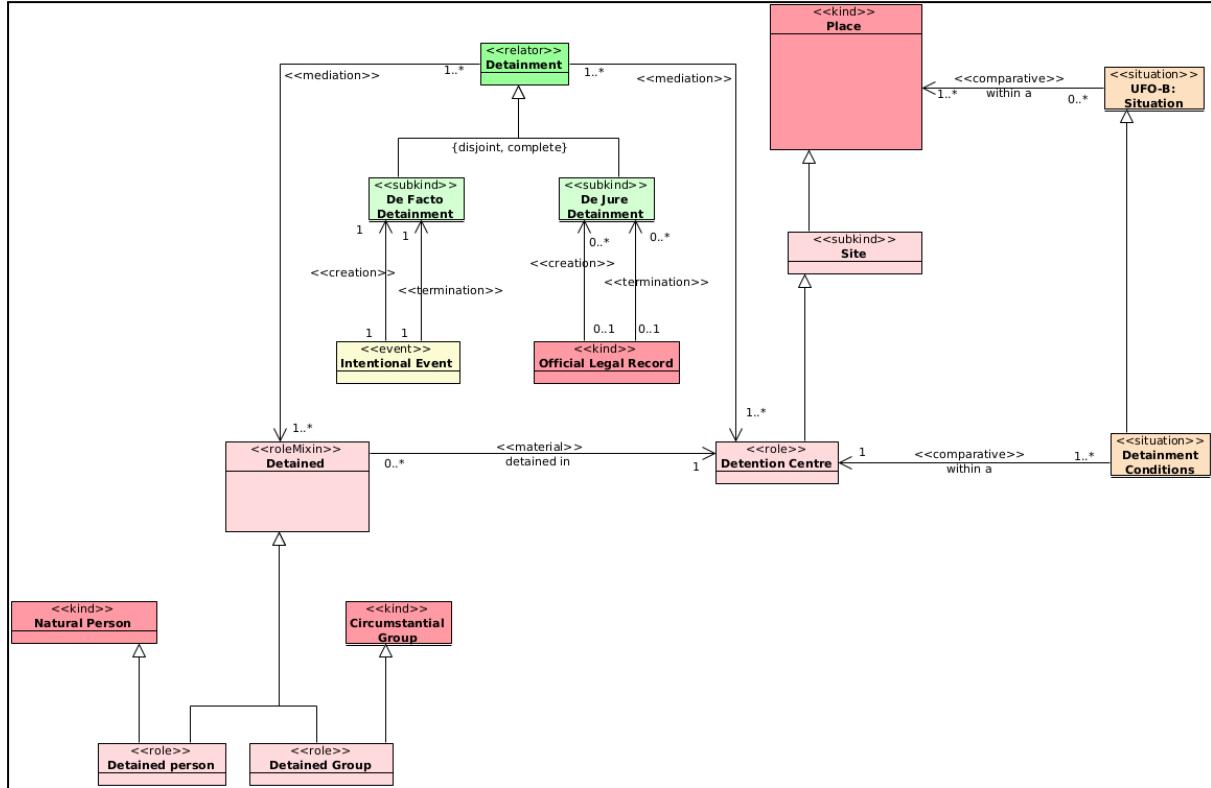
A Detention Site can hold **Detained** both **Detained Group** and **Detained Person**. In a way, Detained Group is redundant since all group members are persons, but when large groups are detained they can also be understood as such.

A **De Facto Detainment** is initialised and stopped through an **Intentional Event**. A **De Jure Detainment** should be both initialised and stopped by an **Official Legal Record**.

As can be deduced by the superclasses (not all visible here, see Module 3, 4 and 7) the conditions of a **Detention Centre** can trigger a **Resulting Event** with **Consequence For Agent**, in this case a Detained Person.

12. Networks

Full OntoRights Module 12: Networks
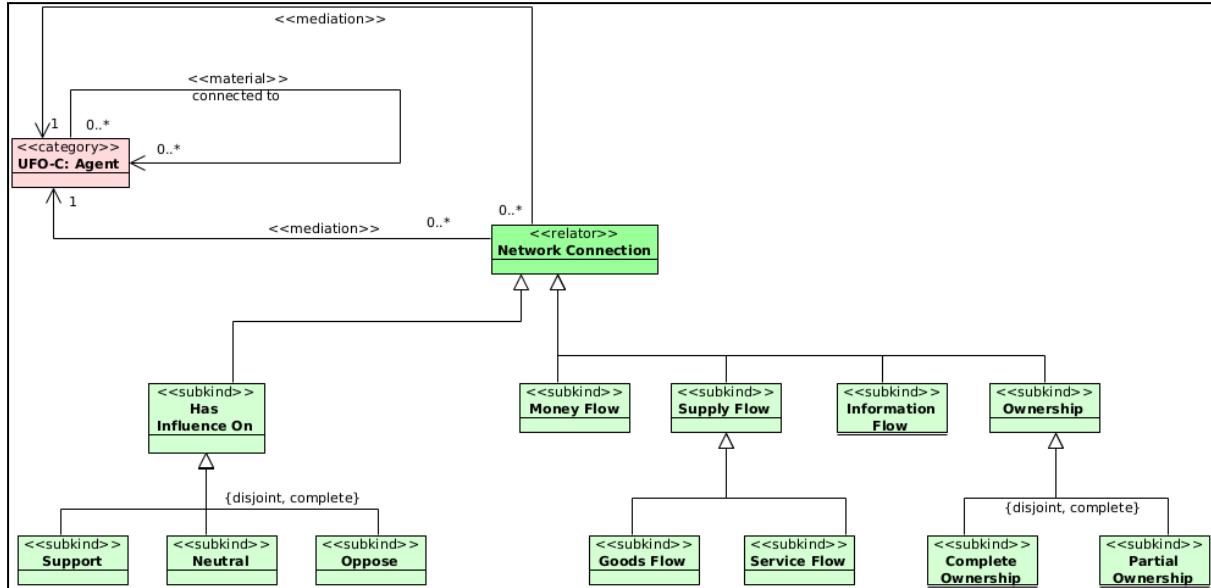
An **Agent** can be connected to another Agent through a **Network Connection**. **Has Influence On** can be used for mapping the allies and opponents of an Agent. The other subclasses express different forms of flows or ownership. Note that they are mostly not disjoint.

13. Human Rights Protection System

Figure 21

Full OntoRights Module 13: Human Rights Protection System
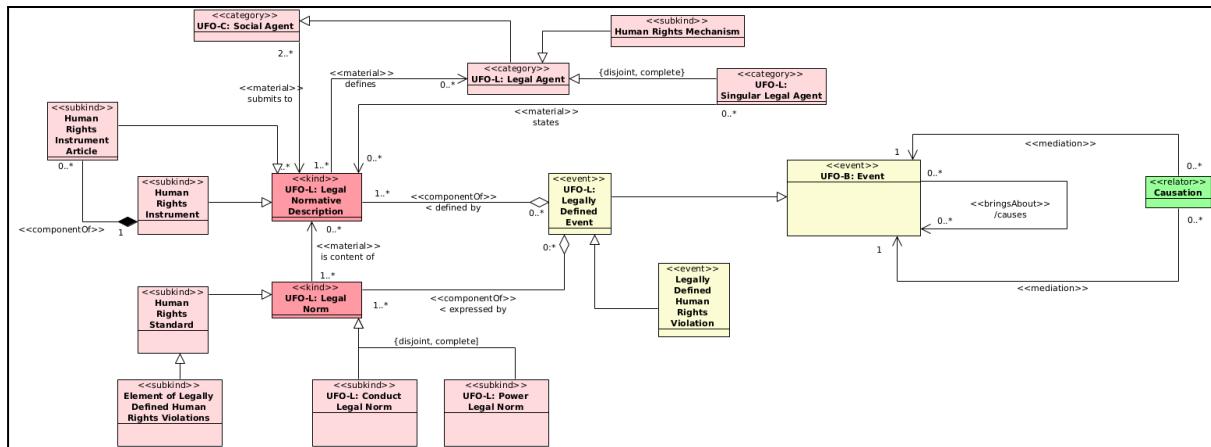
A **UFO-L: Legal Norm** in most cases the content of (i.e. has as source) **UFO-L: Legal Normative Description**. Human Rights Standard is a subclass of **UFO-L: Legal Norm**. While **UFO-L: Conduct Legal Norm** qualifies actions, **UFO-L: Power Legal Norm** controls legal positions (read more in Griffo (2018 p. 11).

Both UFO-L: Legal Normative Description and UFO-L: Legal Norm can be components of **UFO-L: Legally Defined Event**, which Griffo (2018, 5.9.1 Legal Relators) explains as follows:

"In UFO-L, previously defined events are represented as specializations of Event by the category Legally Defined Event. These events are defined by one or more Legal Normative Description and express by one or more than one Legal Norm. (...) By allowing the representation of both predefined events in legal norms and undefined events, UFO-L adopts the theory of the open legal system, as opposed to the closed legal system theory"

Legally Defined Human Rights Violation is a subclass of UFO-L: Legally Defined Event.

A **Human Rights Instrument** is a subclass of UFO-L: Legal Normative Description that in turn often consists of **Human Rights Instrument Articles**.

A UFO-L: Legal Agent, including its mandate, needs to be defined in at least one **UFO-L: Legal Normative Description** to exist. **Human Rights Mechanism** is a subclass of UFO-L: Legal Agent, which is a subclass of **UFO-C: Social Agent**, which is controlled by UFO-L: Legal Normative Descriptions.

14. Monitoring Process

Figure 22

Full OntoRights Module 14: Monitoring Process
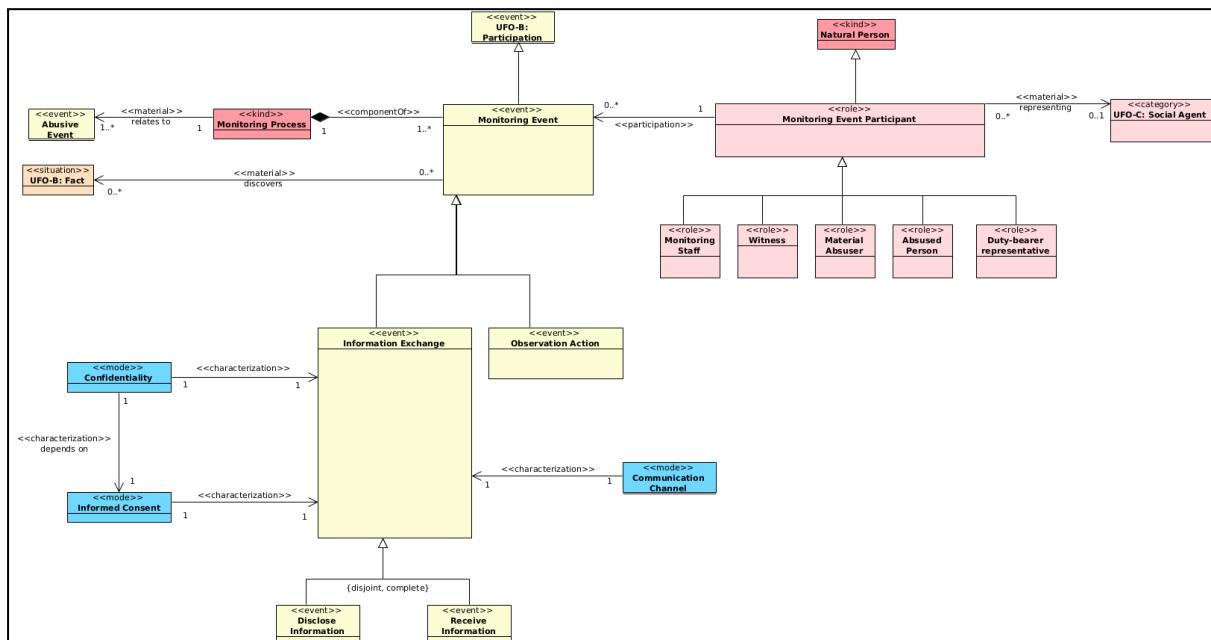
A **Monitoring Action** is a subclass of **Participation** and is part of a **Monitoring Process** of an **Abusive Event**. Monitoring Actions are performed by Natural Persons in different roles, usually while also representing a **UFO-C: Social Agent**. The purpose of a Monitoring Action is to produce information about **Facts** that are generated by Abusive Events, as can be deduced from the superclasses shown in Module 3.

Note that other roles than Monitoring Staff (e.g. **Witness**, **Material Abuser**, etc) can also perform Monitoring Acts. For example, an Witness can take the initiative to send a message to a Monitoring Staff person. This would be represented as one atomic **Disclose Information** event that causes an atomic **Receive Information** event which together form a complex **Information Exchange** event.

15. Information Management

Figure 23

Full OntoRights Module 15: Information Management
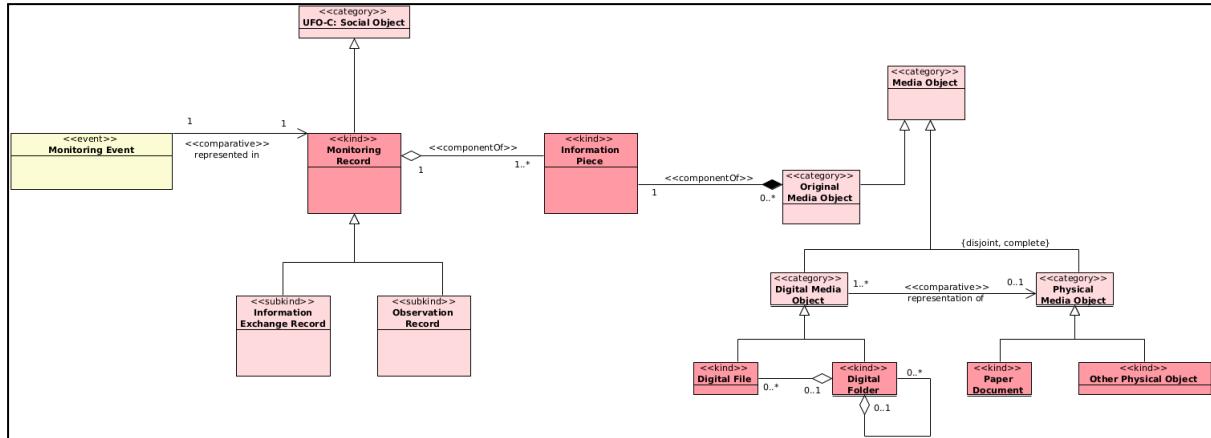
This module can be seen as a continuation of Module 14, since information management mainly represents what happens during the monitoring process.

A **Monitoring Event** (including its associated **Informed Consent**, **Confidentiality**, and **Communication Channel**, see Module 14) is represented in a **Monitoring Record**, which contains the individual **Information Pieces**. This decomposition is necessary since they may have different **Confidentiality** levels.

The subclasses **Information Exchange Record** and **Observation Record** reflect the subclasses of Monitoring Event.

A **Monitoring Record** may contain **Original Media Objects** that were created or received in a **Monitoring Event**. Original Media Object is a subclass of **Media Object** that will never be edited. In other words, it is original in the sense that it remains unchanged in the system. The purpose of this structure is that a human rights group should always know how it first received a piece of information.

Media Objects can be Digital or Physical. A **Physical Media Object** (for example a piece of evidence) that is received would probably be e.g. scanned or photographed to facilitate access to it. The **Digital Media Object** is then a representation of the Physical Media Object.

16. Legal Process

Figure 24

Full OntoRights Module 16: Legal Process
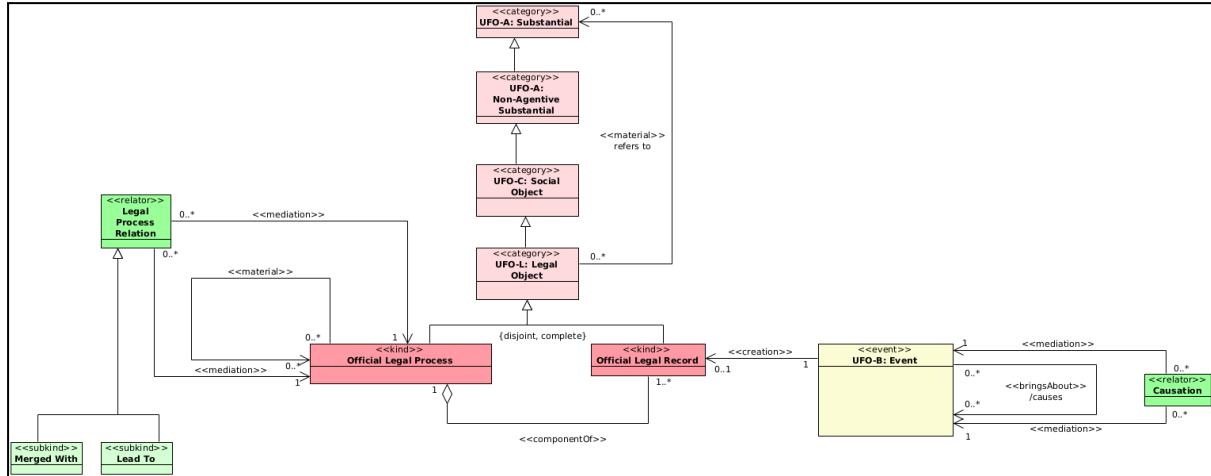
The purpose of this module is to represent official legal processes, such as criminal law cases.

UFO-L: Legal Object is a legal "thing" that is not an Agent. It can refer to any **UFO-A: Substantial**. For example, a verdict in a criminal case will probably have references to Natural Persons, Places, and Legal Norms.

An **Official Legal Process** consists of atomic **Legal Records**, created by **Events**. An Official Legal Process can also have different types of **Legal Process Relations** to other processes. For example, a police investigation can lead to a court case.

5.2. Simple OntoRights

In order to achieve better ease of use for conceptual modelling of case databases, Simple OntoRights was derived from Full OntoRights.

5.2.1. Simple OntoRights Overview

As shown in Figure 25, Simple OntoRights includes nine ordinary modules, and an annex module with data types and enumerations.

Figure 25

Full OntoRights Modules as a UML Package Diagram
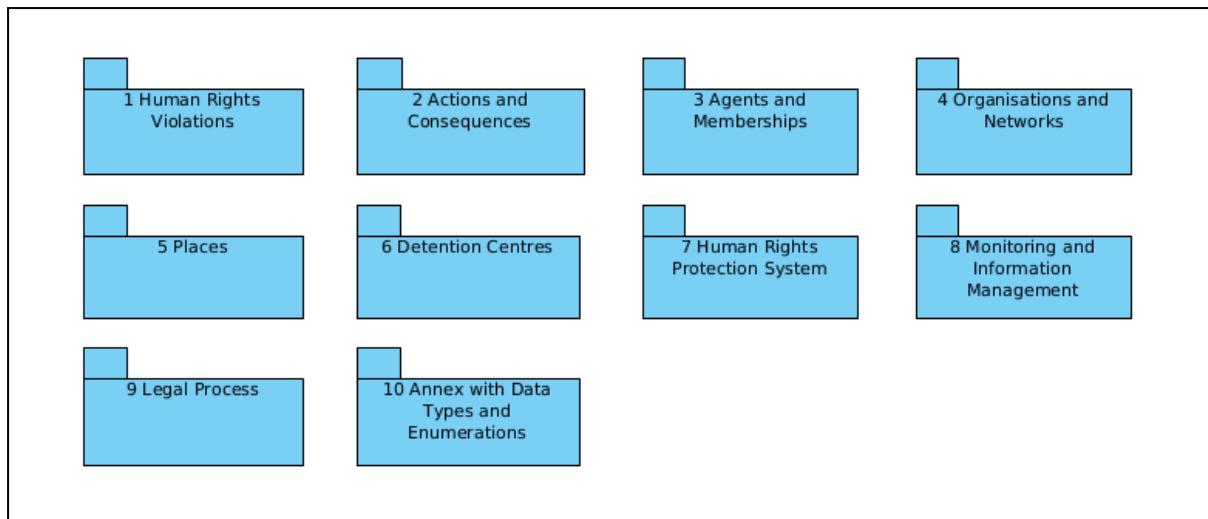
While Full OntoRights prioritised expressivity and alignment with UFO and UFO-L, Simple OntoRights prioritised ease of use. Consequently, Simple OntoRights is not fully aligned with UFO and is less expressive than Full OntoRights. On the other hand, its modules can be used for conceptual modelling of a case database with little need for adaptation. That is why Simple OntoRights also includes suggested attributes and datatypes.

Table 11

Comparison of Number of Elements in Full OntoRights and Simple OntoRights

Element	Full OntoRights	Simple OntoRights
Modules	16	10
Classes	198	34
Associations and generalisations	326	115
Data types and enumerations	0	26
Attributes	0	210

Note. As a comparison, HARE ontology, discussed in 2.4.5. Humanitarian Ontologies has 268 classes (Apisakmontri et al., 2016, p. 76). The emergency planning empathi ontology contains 423 classes and 338 relations (Gaur et al., 2019, p. 398).

Simple OntoRights is less complex but also less expressive than Full OntoRights. The expressiveness can be compared according to the 25 competency questions (CQs) defined in the Practitioner Survey questionnaire in Annex IV. As can be seen in that same annex, while Full OntoRights can express all CQs but one, Simple OntoRights fails three completely and three partly. However, none of the three CQs that Simple OntoRights fails completely had "Very Important" as median or mode.

5.2.2. Simple OntoRights Development Process

The method for converting Full OntoRights into Simple OntoRights can be summarised as:

1. Using single table inheritance (Fowler & Rice, 2003) to collapse subclasses into superclasses, and instead use attributes with boolean values or enumerations to represent them.
2. Converting the OntoUML stereotypes Mode and Quality into attributes.
3. Add some direct associations between classes that in Full OntoRights had to be deduced via other classes.
4. Excluding classes whose only purpose was mapping with UFO and UFO-L.
5. Excluding classes to reduce complexity.
6. Changing multiplicity to prioritise flexibility. While the multiplicity of Full OntoRights expresses what exists in the real world, multiplicity in Simple OntoRights is adjusted to the information that can be expected to exist in a real case database.
7. Removing the distinction between Atomic and Complex classes (concerns Event, Place, Organisation, and Unit). Instead recursive partOf associations were used.
8. Add attributes and datatypes.
9. Other adjustments for the sake of usability.

Note that some Full OntoRights modules, such as Module 7 and 10, were used more than once as source modules. As shown in Table 11, the number of classes was reduced considerably.

5.2.3. Simple OntoRights Description

The complete Simple OntoRights, including interactive diagrams, can be accessed online.[17]

Figure 26
Simple OntoRights Published as a Web Site
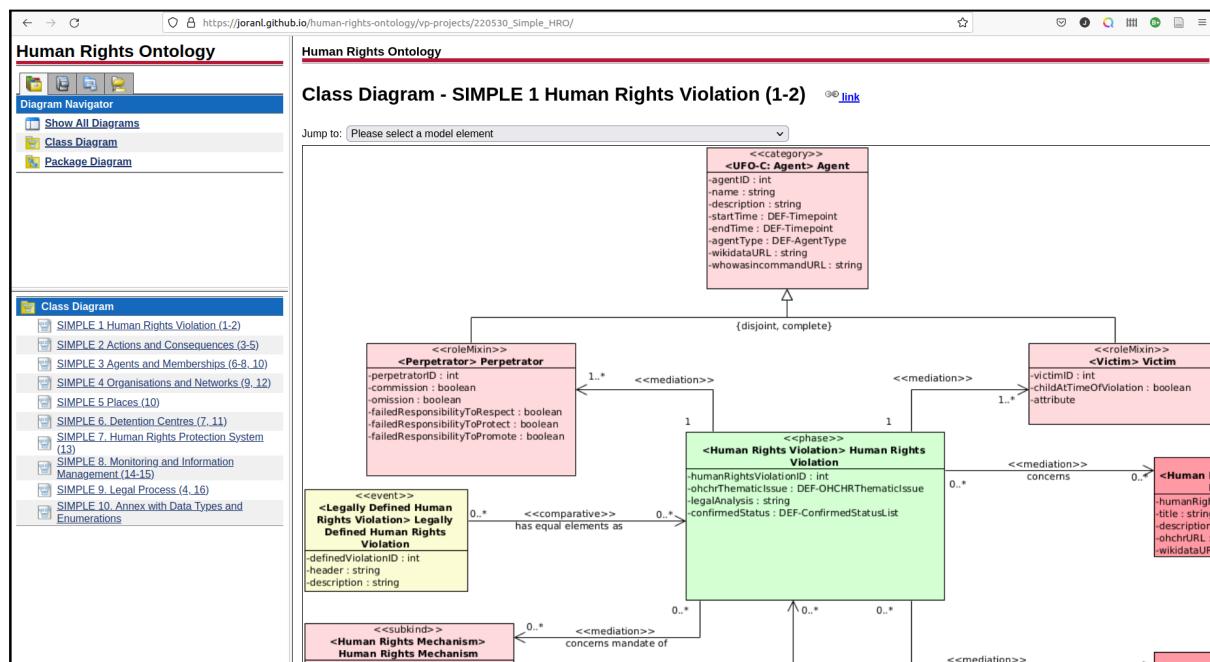
Also note that while the description below explains Simple OntoRights compared to its Full OntoRights origin, a standalone description directed to human rights practitioners is available in the accompanying Manual in Annex V.

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[17] Version 1.0 of Simple OntoRights is available at
https://joranl.github.io/human-rights-ontology/vp-projects/Simple_OntoRights_v1_0/

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Like Full OntoRights, Simple OntoRights was designed with OntoUML Visual Paradigm Plugin without any warnings of syntactical issues. In order to maintain the connection to Full OntoRights (and consequently UFO), the classes in Simple OntoRights have been marked with "<>" characters surrounding the Full OntoRights classes that they are stereotyping. (The "<<>>" marks are OntoUML stereotypes).

5.2.3.1. Simple OntoRights Modules Description

1. Human Rights Violations

(Converted from Full Modules 1-2, and 7.)

Figure 27

Simple OntoRights Module 1: Human Rights Violations
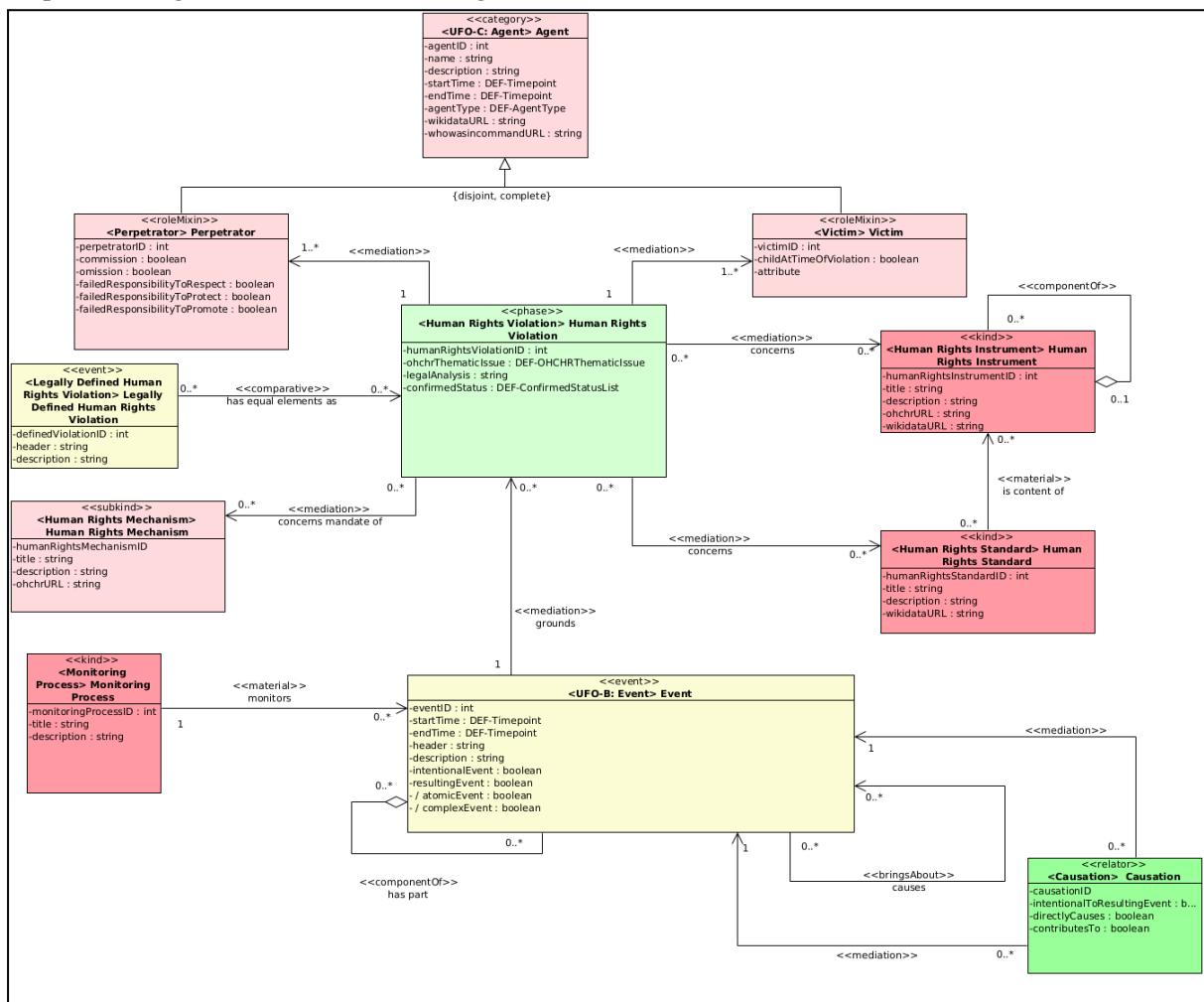
From Full OntoRights can be deduced that a **Human Rights Violation** violates a **Human Rights Standard**, which in turn is the content of a **Human Rights Instrument**. However, this distinction is not always important in practical human rights monitoring. Therefore, in Simple OntoRights there is a direct connection between Human Rights Violation and Human Rights Instrument. Also, the multiplicity has been changed to allow for Human Rights Instruments without an associated Human Rights Standard, in order to reduce the amount of information that has to be registered.

In Full OntoRights, a Human Rights Violation results from a conflict between an **Abusive Event** and Human Rights Standards through a **Legal Analysis**. In Simple OntoRights, the Legal Analysis class has been converted to an attribute of Human Rights Violation, and since a Human Rights Violation refers to exactly one **Event**, the association from Human Rights Standard to Event could be redirected to Human Rights Violation.

In UFO-L (and Full OntoRights), Legally Defined Event is a subclass of Event. This structure was impractical for Simple OntoRights. Therefore, in Simple OntoRights, **Legally Defined Human Rights Violation** connects directly to Human Rights Violation.

In Simple OntoRights, several subclasses of Agent have been excluded. Therefore, in Simple OntoRights, both **Perpetrator** and **Victim** connect directly to **Agent**.

2. Actions and Consequences

(Converted from Full Modules 3-5)

Figure 28

Simple OntoRights Module 2: Actions and Consequences
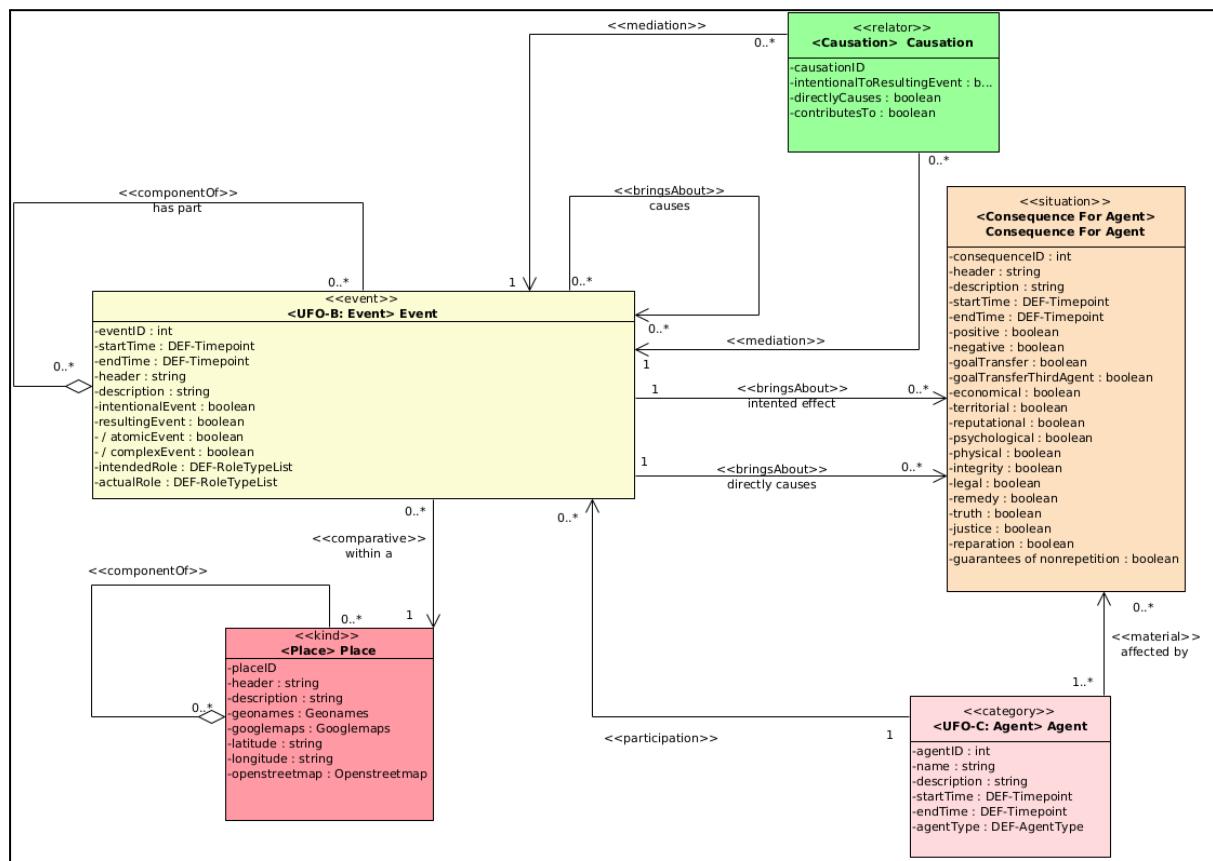
As can be seen, single table inheritance (Fowler, 2002) was used to collapse several subclasses of UFO-B: Event from Full OntoRights and in Simple OntoRights instead represent them as attributes with boolean values in the **Event** class.

Several less important classes were excluded: UFO-B: Counter-factual situation, Intention, Goal, Risk, Substantial, Force At Work, Recording, Media Object. Most of them concerned expressing counterfactual situations. In the same vein, Real Consequence For Agent was also collapsed into **Consequence For Agent**.

3. Agents and Memberships

(Converted from Full Modules 6-8, 10)

Figure 29

*Simple OntoRights Module 3: Agents and Memberships*
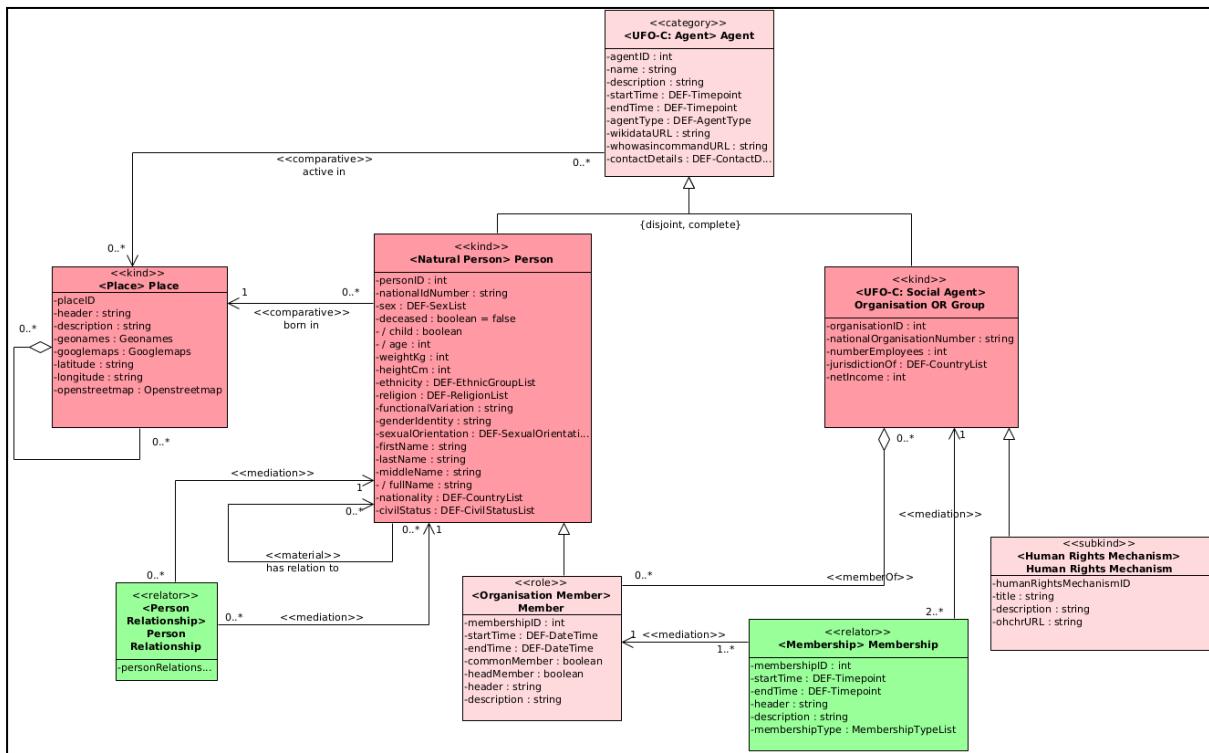
Full OntoRights, being aligned with UFO and UFO-L, contains a large number of classes representing categories of agents and groups. In Simple OntoRights, all that is left is **Agent** with its subclasses **Person** and **Organisation Or Group**. The attribute **agentType** represents the most important of the collapsed subclasses.

4. Organisations and Networks

(Converted from Full Modules 9, 11)

Figure 30

*Simple OntoRights Module 4: Organisations and Networks*
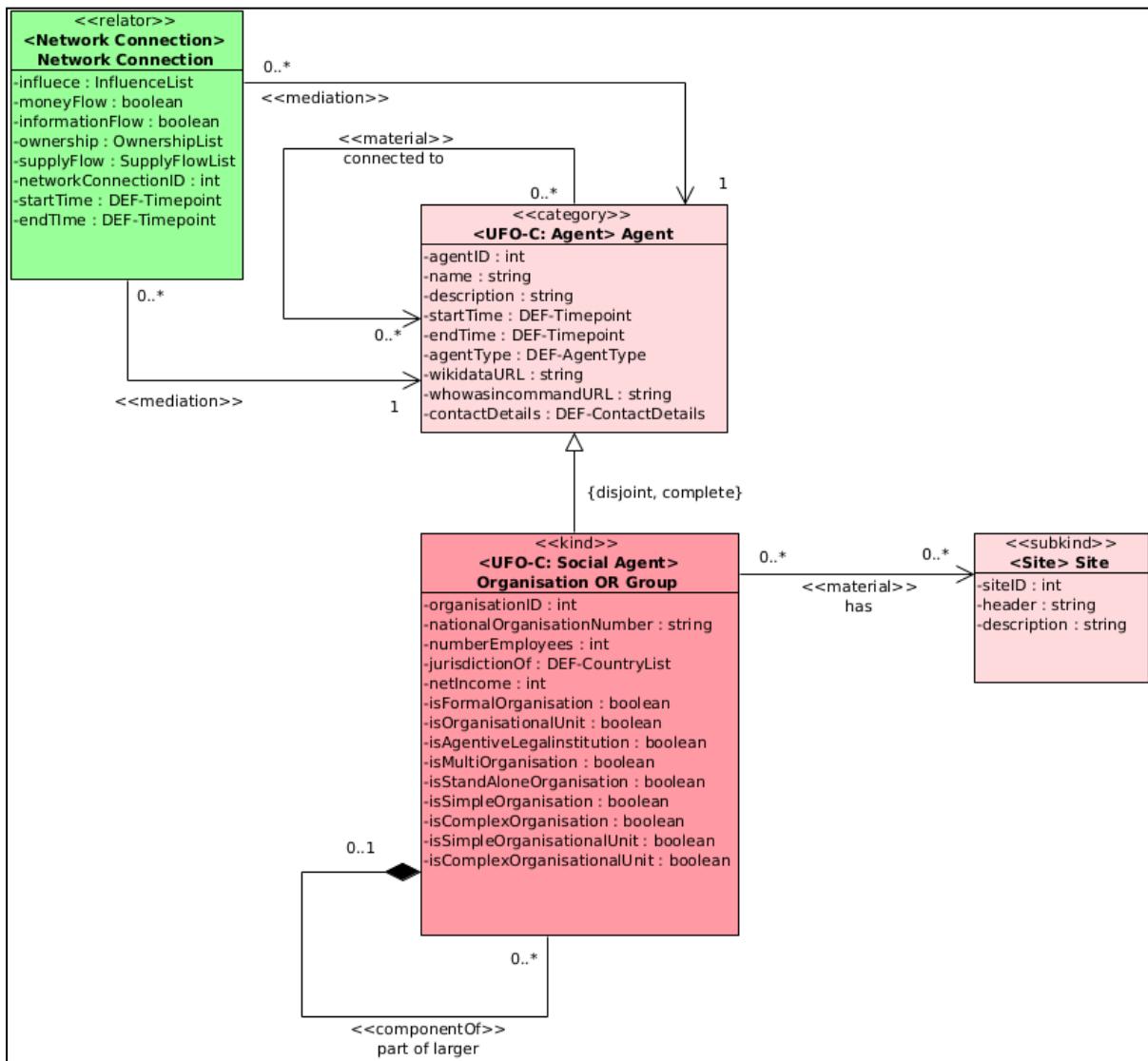
The different subclasses of E-OPL: Organisation in Full OntoRights has in Simple OntoRights instead been collapsed into **Organisation** and represented as attributes with boolean values. Also the many subclasses of Network Connection have been converted to attributes.

The Affiliation and Assignment classes from Full OntoRights were excluded from Simple OntoRights. Resembling relations can instead be expressed with the **Membership** class (see Module 3 of Simple OntoRights.

5. Places

(Converted from Full Module 10)

Figure 31

*Simple OntoRights Module 5: Places*
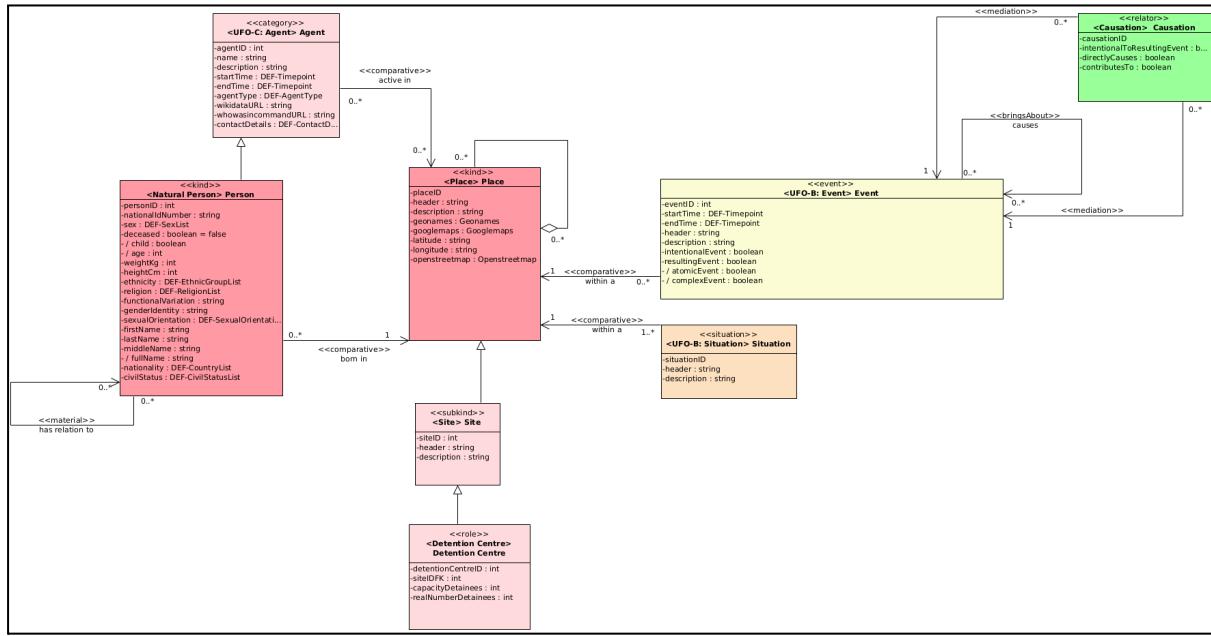
This module is very close to its Full OntoRights counterpart.

6. Detention Centres

(Converted from Full Modules 7, 11)

Figure 32

*Simple OntoRights Module 6: Detention Centres*
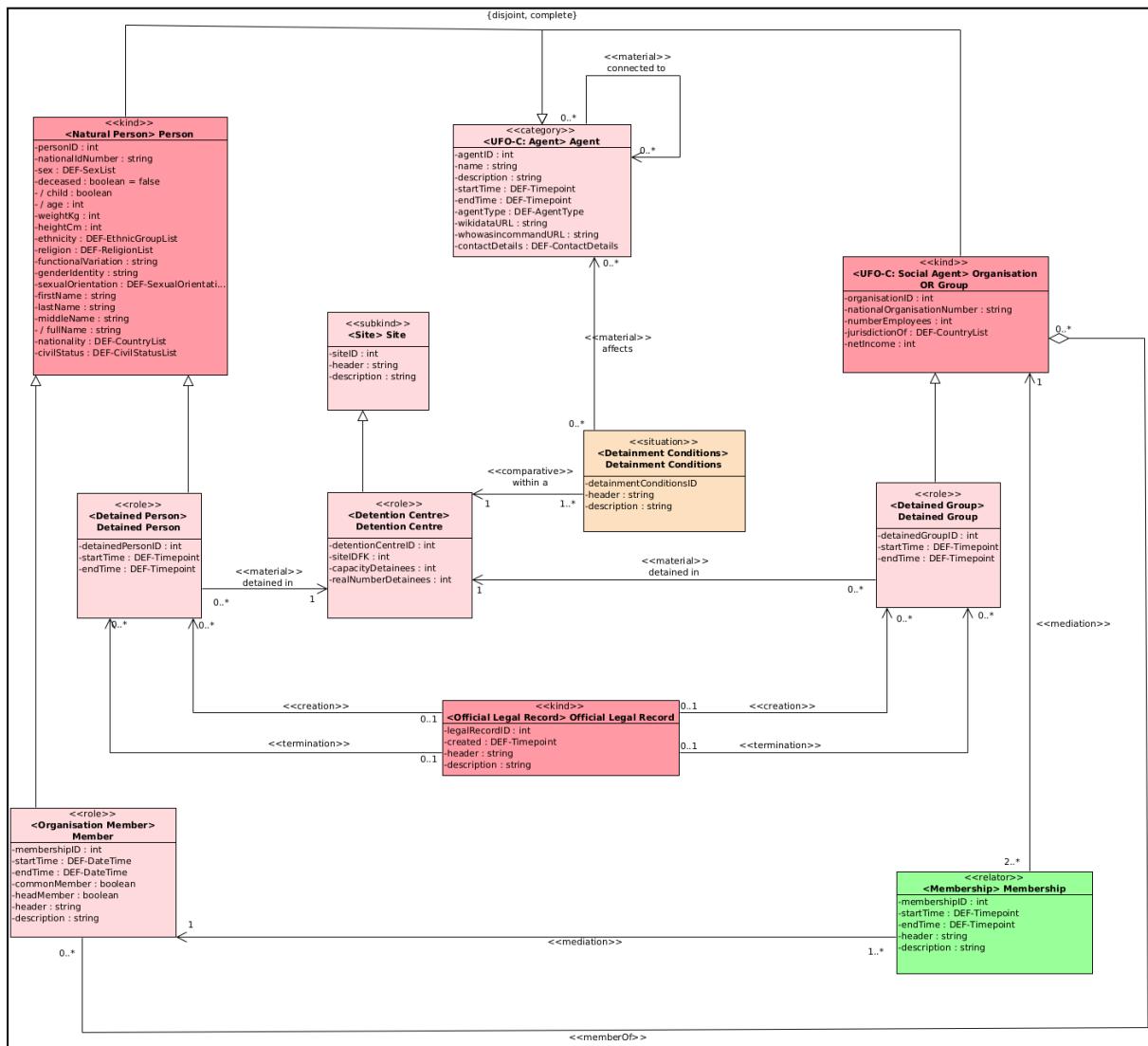
This module is very close to its Full OntoRights counterpart Module 11, but for clarity also shows the Membership class from Full OntoRights Module 7.

While Full OntoRights distinguishes between De Facto Detainment and De Jure Detainment, Simple OntoRights only includes the latter.

7. Human Rights Protection System

(Converted from Full Modules 13)

Figure 33

Simple OntoRights Module 7: Human Rights Protection System
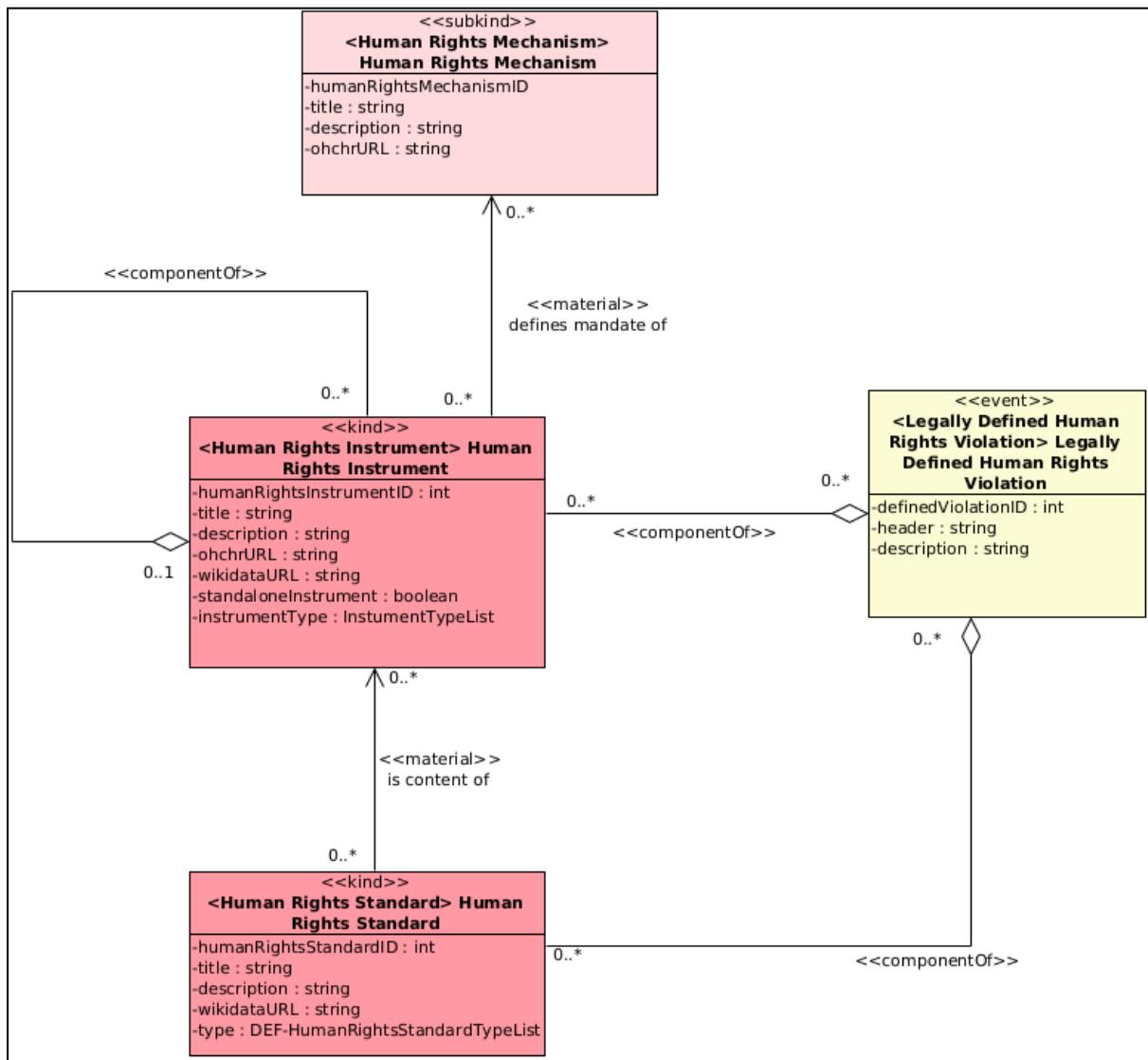
The human rights specific classes have replaced their UFO-L superclasses.

The **submits to** relation from the Full OntoRights module was considered of little practical importance, and therefore excluded.

The distinction between **Human Rights Article** and a standalone **Human Rights Instrument** was replaced with a recursive partOf relation and an attribute.

8. Monitoring and Information Management

(Converted from Full Modules 14-15)

Figure 34

Simple OntoRights Module 8: Monitoring and Information Management
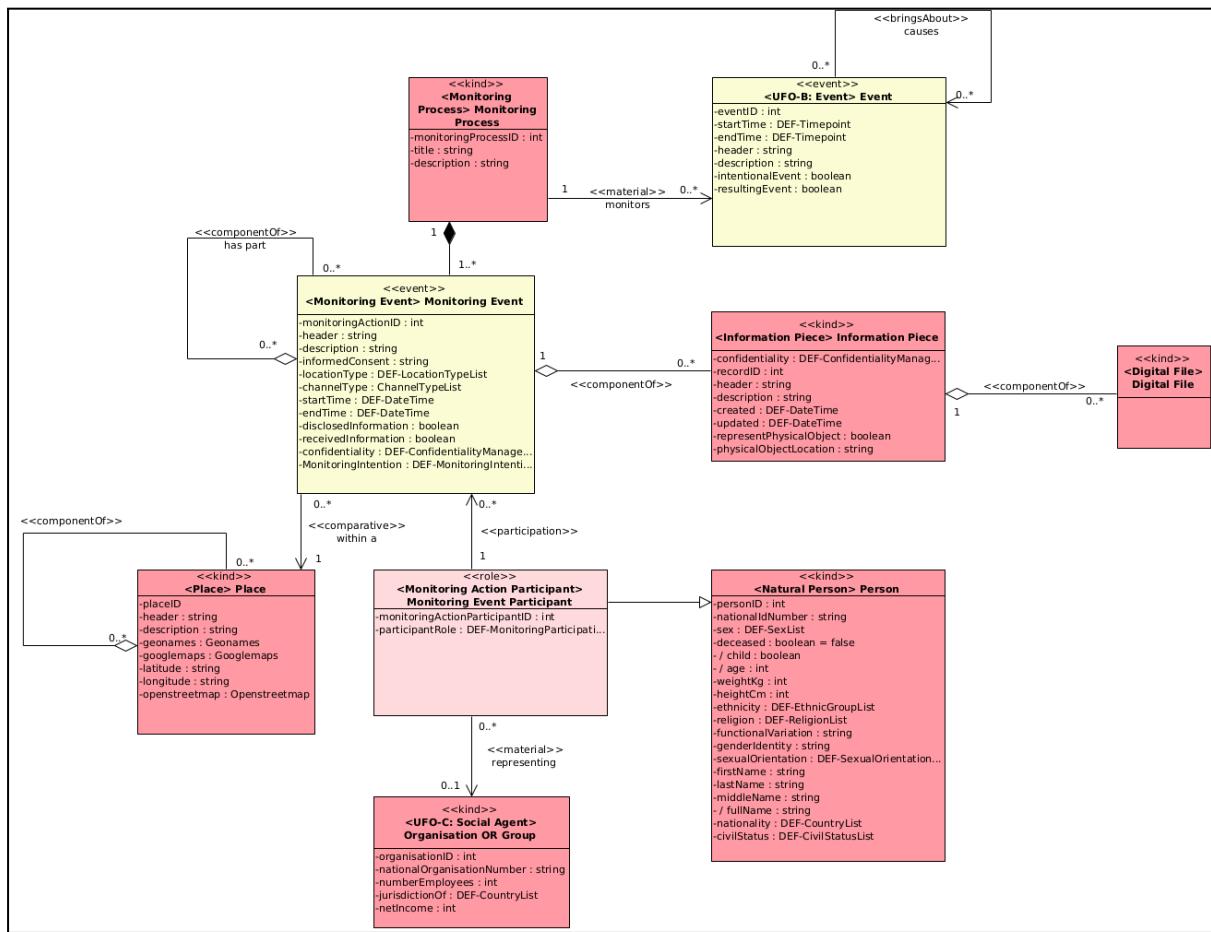
The Full OntoRights subclasses of and their associated <mode> classes have in Simple OntoRights been collapsed into **Monitoring Event** and represented as attributes.

In Full OntoRights, a Monitoring Event discovers a Fact. However, this has little practical importance, so the Fact class was excluded in Simple OntoRights. Also, the Full OntoRights distinction between Abusive Event and common **Event**, as well as the distinction between a **Monitoring Event** and its representation as a Monitoring Record was considered unimportant for Simple OntoRights.

In Simple OntoRights, **Monitoring Event Participant** had its subclasses collapsed and turned into attributes.

The Full OntoRights distinction between different types of Media Objects was considered of little importance, and it was sufficient to just use one class in Simple OntoRights: **Digital File**, that may or may not represent a certain physical object.

9. Legal Process

(Converted from Full Module 4, 16)

Figure 35

Simple OntoRights Module 9: Legal Process
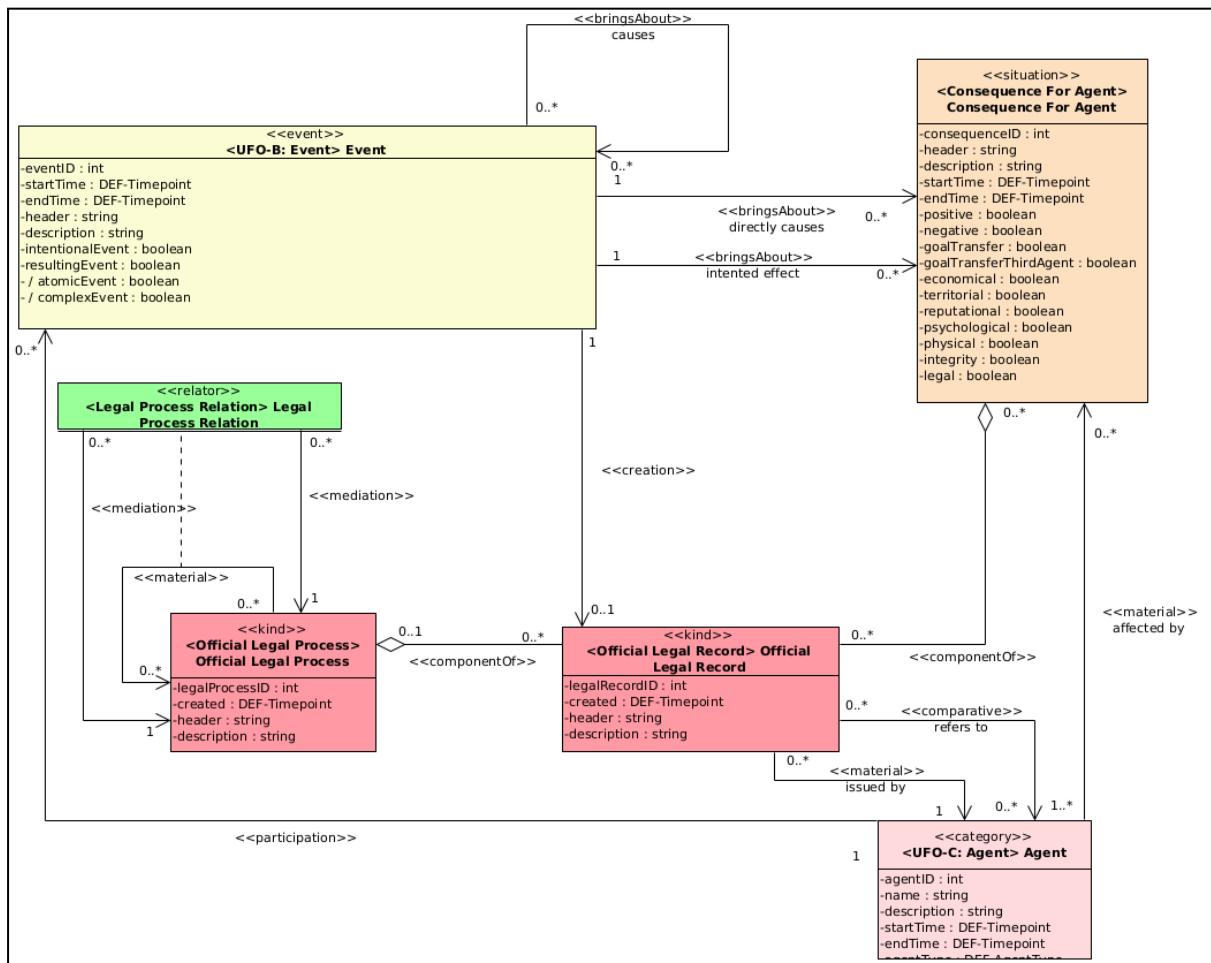
The superclasses from UFO and UFO-L in Full OntoRights have been excluded in Simple OntoRights.

There are two relations from **Official Legal Record** to **Agent**, and one to **Consequence for Agent**, that in Full OntoRights has to be deduced, but in Simple OntoRights have been made direct.

Note that Official Legal Record and **Official Legal Process** do not necessarily have to be associated with other classes in this module in an individual database, i.e. they can stand alone.

10. Simple OntoRights Annex

The Annex contains data types and enumerations.

Figure 36

Simple OntoRights Module 10: Annex
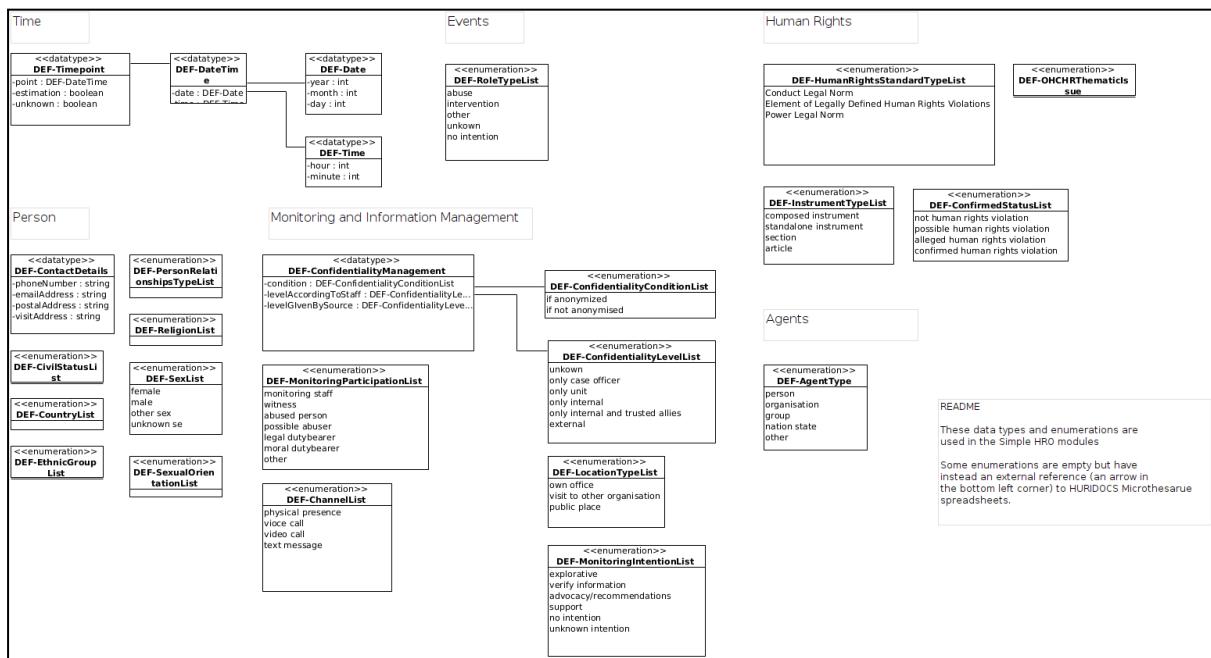
5.3. Manual for Instantiating Simple OntoRights

A Manual, available in Annex V was developed with a succinct explanation of Simple OntoRights and a step-by-step instruction for how to instantiate it as a conceptual model for a specific case database. The purpose is that human rights practitioners who want to use Simple OntoRights only will have to read the Manual, not the whole thesis. The Manual was further adapted during the demonstration activity, which included two instantiations.

6. Evaluation

6.1. Demonstration

As stated in 3.2.4. Demonstration, this activity included two instantiations of Simple OntoRights. The first was for an invented case, the second for a real case. As also stated previously, the demonstration activity was not the focus of this thesis.

6.1.1. Method Application

The invented case (Harassment Stop) was written with the aim of complementing the real case and to illustrate how Simple OntoRights can be used. No particular method was used.

For the real case (Committee for Justice), additional information and requirements was collected through a semi-structured interview in May 2022 (see script in Annex VI)[18]. One of the participants from the Practitioner Survey was offered to participate. The author took notes, and after the interview the result was sent to the participant for respondent validation and informed consent reconfirmation. The ontology was instantiated, and an interview was later held with the same participant as part of the evaluation activity. Committe for Justice preferred to be public about its participation, and since neither the organisation nor the author could see any particular risk in this case, the organisation was not anonymized. Also the instantiation designed for Committe for Justice could be included, since it was built on information that already was public on the organisation's website *Justice Watch Archive* (n.d.). However, the identity of the participant from Committee of Justice was anonymized in order to protect her/his interests, as described by Denscombe (2010, p. 331).

6.1.2. Results

6.1.2.1. Invented Case: Harassment Stop

Harassment Stop monitors incidents of harassment against a minority group in its city. Most incidents are carried out by political extremists and other intolerant people. Harassment Stop believes that the reaction of the state authorities has been insufficient. The police argue that few incidents are officially reported to them. The cases that have been reported to the police rarely have led to exhaustive investigations. Harassment Stop wants to monitor the incidents to:

- Advise and support the victims.
- To make a well-founded analys.
- To put pressure on the authorities to take actions, both in individual cases and in general.

It is not very important for Harassment Stop to make a legal analysis of the human rights implications of individual cases, since most incidents are clearly crimes under national law.

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[18] The method was originally planned to be a questionnaire, but the participant preferred to be interviewed, which is why the script has "questionnaire" in its title.

Many of the victims have little confidence in the police, and also fear acts of revenge from the perpetrators. Therefore, it is common that victims disclose different parts of their testimonies under different conditions of confidentiality.

Harassment Stop decides to develop their database in phases. Note that each phase has footnotes to access the result as a static website.

In *phase 1*, they use only Simple OntoRights **Module 2: Actions and Consequences**.[19] For the purpose of Harassment Stop, only some changes of the attributes are necessary to make them more specific for the incidents that Harassment Stop is monitoring.

Now, Harassment Stop can have a detailed view of the incidents. Also, it can register the action taken by the authorities in response to an incident. However, the monitoring staff realise that they need to keep better track of the different official processes that are initiated by the authorities. Therefore, in *phase 2*, they incorporate Simple OntoRights **Module 9: Legal Process** into their database.[20] Also this module only needs some changes of attributes to customise if sufficiently. Now, the data model allows tracking the official documentation generated after an incident, for example a police report, which sparks an investigation process, which may lead to a court case, etc.

So far, the data model has not distinguished much between persons and collective agents, such as police departments and other public authorities. However, Harassment Stop would now also like to track the actions of individual agents and better express how the involved authorities are organised. In *phase 3*, Simple OntoRights **Module 3: Agents and Memberships** is used to break down the **Agent** class into the **Person** and **Organisation Or Group** subclasses, and connect them to each other.[21] Now, it is easier to create relevant attributes for persons, for instance prohibited discrimination grounds. In this module, Harassment Stop considers that the subclass **Human Rights Mechanism** is not sufficiently important, so it is excluded.

In *phase 4*, Harassment Stop decides it is after all worth the effort to keep explicit track of the human rights implication in their case database.[22] Until now, they have simply used a different subsets of registered events as base for analysis written in common text documents outside of the database. So, Harassment Stop incorporates Simple OntoRights **Module 1: Human Rights Violations** into their database. However, it still considers that **Human Rights Mechanism** is not very relevant, nor **Legally Defined Human Rights Violation**. As explained above, one-by-one the abusive incidents that Harassment Stop monitors can rarely be considered a human rights violation in a legal sence, but aggregated they do form patterns of discrimination and omission. Now the newly hired juridical analyst can gather many cases into one overarching **Event**, and make a detailed juridical analysis according to **Human Rights Instruments** and **Human Rights Standards**.

In *phase 5*, Harassment Stop has had incidents when they have mistakenly shared information that violated the informed consent given by their sources. Also, authorities have questioned the information that Harassment Stop presents, and sometimes the monitoring staff have lost track of the

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[19] https://joranl.github.io/human-rights-ontology/vp-projects/HarassmentStop_phase1
[20] https://joranl.github.io/human-rights-ontology/vp-projects/HarassmentStop_phase2
[21] https://joranl.github.io/human-rights-ontology/vp-projects/HarassmentStop_phase3
[22] https://joranl.github.io/human-rights-ontology/vp-projects/HarassmentStop_phase4

exact information that they received about a case. Therefore, they decide to fully implement Simple OntoRights **Module 8: Monitoring and Information Management**.[23]

6.1.2.2. Real Case: Committee for Justice

Committee for Justice monitors cases of arbitrary detentions and maltreatment during detention in Egypt. It aims to track how different criminal investigations involve different persons, who in turn are sent to different detention centres.

The instantiation can be accessed as a static website.[24] When dealing with real organisation, it became apparent that there is a myriad of potential relations in the human rights violations documentation domain that are unfeasible to include in a general domain ontology. For example, as shown in Figure 37, Committee for Justice tracks several different categories of people involved in criminal investigations, which required adding several associations between **Official Legal Process** and **Person**. However, this adaptation could be done quickly with no negative effect on the model as a whole.

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[23] https://joranl.github.io/human-rights-ontology/vp-projects/HarassmentStop_phase5
[24] The instantiation designed for Committe for Justice is available at
https://joranl.github.io/human-rights-ontology/vp-projects/CfJ_instantiation/

Figure 37

Fragment of the Instantiatiated Model Designed for Committee for Justice
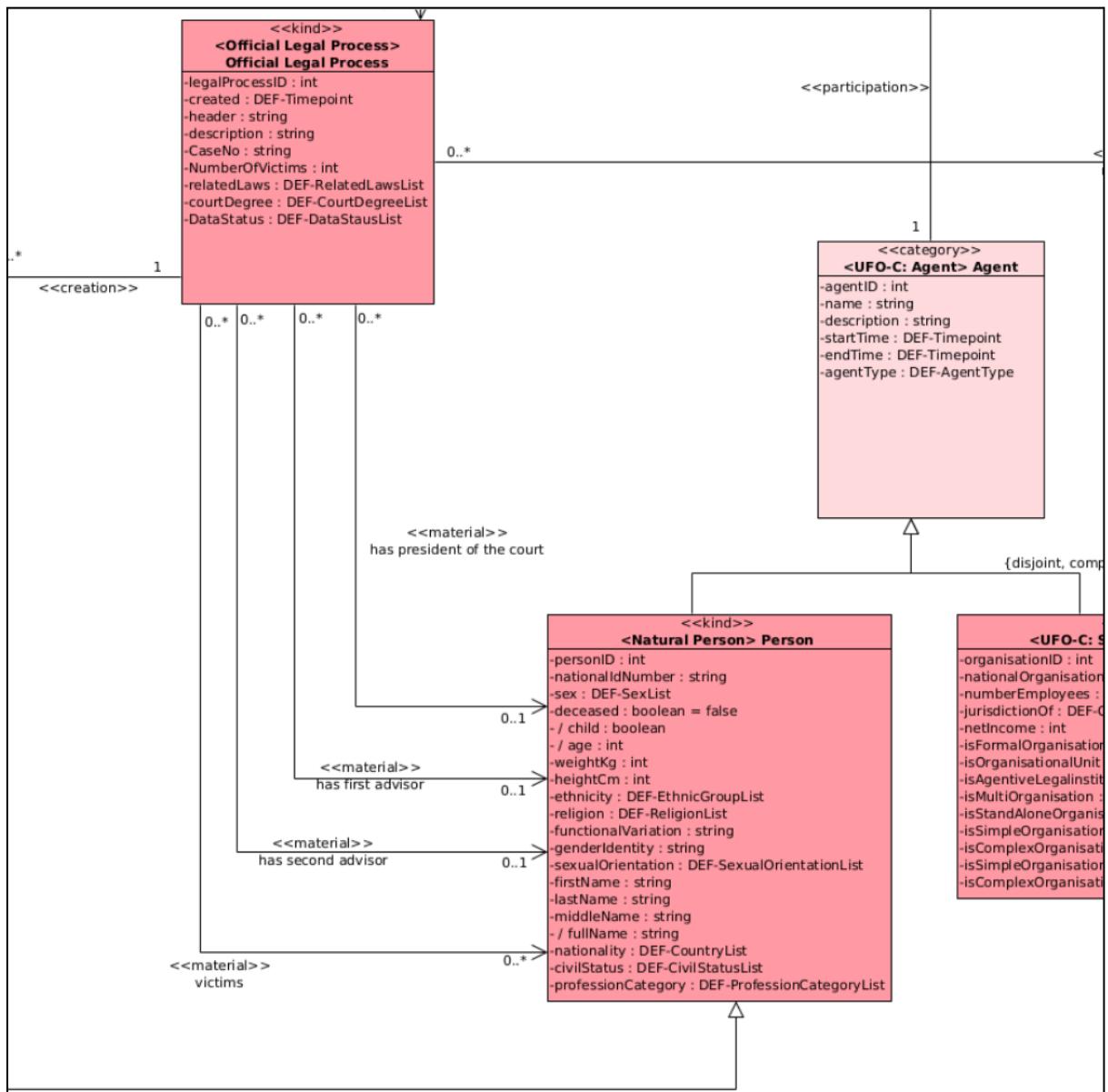
Committee for Justice reviewed the proposed instantiation, and considered that it would be useful as a starting point if the organisation in the future was to do major changes to its database.

"It is extremely efficient, everything is there" (Committee for Justice Participant)

A negative aspect, however, is that the model contains so much information that it could be overwhelming. The participant did not consider this a problem personally, but was thinking about other colleagues with less technical skills, if they were to be involved in the conceptual modelling.

6.2. Evaluation

As stated in 3.2.5. Evaluation, this activity was conducted through semi-structured interviews and informed argument. Only Simple OntoRights and its accompanying Manual was evaluated, not Full OntoRights. As also stated previously, the evaluation activity was not the focus of this thesis.

6.2.1. Method Application

While the general usage qualities (1-2) and structural qualities (3-5) were mainly evaluated through the semi-structured interviews, the management qualities (6-7) were evaluated through informed argument (Hevner et al., 2004, Table 2).

The three participants of the semi-structured interviews were chosen from HURIDOCS staff that had been involved in OntoRights project, and from participants of the Practitioner Study that had had instantiations of Simple OntoRights done for them (see the demonstration activity above). In other words, the sampling was purposive, as described by Denscombe (2010, pp. 34-36). All three that were offered to participate accepted. As in the demonstration activity, the participation was anonymous.

The interview questions referring to usage qualities were based on the Technology Acceptance Model (TAM), drawing from Davis (1989) and Moody (2003). The interview questions, available in Annex VII, also covered structural qualities, but not management qualities.

Before the interview, the participants had received the Manual, and also links to an interactive export of Simple OntoRights and the Harassment Stop demonstration case (see demonstration activity). The interview started with asking the participants to imagine that they were about to design a conceptual data model for a human rights group in need of a case database to document violations of human rights (from now on referred to as the Task). The interviews were done in May 2022 and took 60-90 minutes each.

The results of the interviews were analysed with the non-functional requirements as themes, i.e, the thematic analysis was theoretical (Braun & Clarke, 2006). Respondent validation was done.

6.2.2. Results

In this section, the results from the evaluation interviews and informed argument is presented with regards to the requirements elicited in 4.2.1. Non-functional Requirements. A summary is presented in Table 12.

Table 12

Summary of Non-functional Requirements Evaluation Results

No.	Requirement	Fulfilment
1	usefulness	Yes
2	ease of use	Partly
3	customizability	Yes
4	modularity	Yes

5	completeness	Yes
6	widely used relevant standards	Yes
7	tools that are collaborative and open source	Partly

Note. The judgement in the Fulfilment column is according to the perception of the author.

6.2.2.1. Usage Qualities

Requirement 1: *The ontology should have high usefulness for human rights groups doing conceptual modelling*

The participants thought that using Simple OntoRights and the Manual (togther referred to as the Artefact) would make the Task quicker and also improve the outcome. While the least positive participant thought that the Artefact perhaps could be useful, the others were more convinced. Participant 1 stated that overall, the Artefact would be "very, very useful" for the Task.

Even if the Artefact would not be instantiated as intended by a human rights group, the participants also thought that just looking at the Simple OntoRights diagrams would serve as a type of checklist of what a database may or may not include, and provide ideas of how to solve it.

"Having guidelines to work from is better than nothing. By having something that is already well known it becomes much easier." (Participant 3)

Interestingly, Participant 1 mentioned in particular the module for Monitoring and Information Management as useful, arguing that this area of modelling has often been considered difficult. Note that the result from the Practitioner Survey that the author of this thesis personally found the most surprising was the high priority given to information management.

However, the participants also saw a risk that a human rights group could be overwhelmed by the many classes, associations and also by the technically sounding attribute names (read more in Requirement 2).

Requirement 2: *The ontology should have high ease of use for human rights groups doing conceptual modelling*

Unsurprisingly, the perceived ease of use is highly related to prior experience in conceptual modelling

"The great challenge is to understand all this without being an engineer. (...) Many organisations do not have a technological team. For the great majority of people [these diagrams] are very frightening." (Participant 2)

Thanks to the publishing tool of Visual Paradigm, Simple OntoRights could be accessed as a simple local website. On the one hand, this was considered valuable compared to non-interactive diagrams. On the other hand, for someone unfamiliar with OntoUML and UML, the diagrams also suffered from information overload, mostly related to the presence of OntoUML stereotypes.

A gap was identified between the very basic conceptual modelling described in HURIDOCS' Community Resource, and the Artefact. For someone with no prior experience in conceptual modelling, the Artefact could prove too difficult. One suggested way to partly bridge the gap could be

to present key fragments of Simple OntoRights in an even simpler notation than UML, stripped from UFO stereotypes and most attributes. Short introduction videos and translations to languages such as Arabic and Spanish were also suggested.

According to the Technology Acceptance Model (TAM), the combination of perceived Usefulness and perceived Ease of Use should logically lead to an *Intention to Use*. All participants stated they would use the Artefact in varying degrees next time a similar Task was presented in the future.

"It is very likely. I definitely would use it." (Participant 3)

They were also asked if they would recommend it to other groups to use. Two said yes, but one participant said it depended on the technological competence of the group.

6.2.2.2. Structural Qualities

Requirement 3: *The ontology should have high customizability*
The participants thought the Artefact appeared to be flexible with regards to the many different types of issues that human rights groups can monitor. Participant 3 estimated it could be useful for 90-95 percent of human rights groups.

"It is quite adaptable, it can be used for different reasons and different needs. It is perhaps 90-95 percent adaptable." (Participant 3)

Compared to physical case databases, Simple OntoRights has a higher level of abstraction. Some participants recognized that this, in combination with the comprehensive set of modules, increased the customizability. On the other hand, the level of abstraction also makes the Artefact harder to understand. In that sense, the Artefact was considered to have limited customizability for human rights groups with very scarce resources.

Requirement 4: *The ontology should have high modularity*
The participants agreed that the division into modules, that could standalone but still were part of the same larger model, was successful. However, Participant 1 emphasised that it is important to acknowledge that databases that are developed and implemented iteratively (which is encouraged by the Manual), will have to handle problems with incomplete data in the older cases.

Requirement 5: *The ontology should have high completeness*
While two participants considered the Artefact very complete in terms of what human rights issues it could express, Participant 2 thought that it should be complemented to better represent situations in detention centres, and for human rights defenders.

6.2.2.3. Management Qualities

The evaluation of the management qualities continues the discussion initiated about choosing a design platform for OntoRights in 5. The Artefact.

Requirement 6: *The ontology should be made available with the most widely used relevant standards.*
For this requirement, a great benefit of the OntoUML ontology language and its Visual Paradigm Plugin is that builds on the large UML user community. Even if very few database designers in human

rights groups have experience from OntoUML in particular, many more are familiar with UML, and the gap between two languages is small. In fact, even if understanding OntoUML is an advantage when instantiating Simple OntoRights, it is not necessary.

Requirement 7: *The ontology should be published with tools that are collaborative and open source*
The ontology will be published with an open licence on GitHub, which is collaborative and open source. Visual Paradigm, however, is neither free nor open source. The community edition of Visual Paradigm is free for noncommercial use, but does not include the feature that published the ontology as a local website, which is a limitation.

7. Discussion

7.1. Research Goal

The research goal of this thesis was to design a domain ontology for human rights documentation with the primary purpose of facilitating conceptual modelling of case databases for human rights groups. The research goal is considered accomplished.

7.2. Research Process and Result

The unstructured interviews in the exlicate problem and define requirements activites rendered preliminary non-functional requirements. These were elaborated using the Information Infrastructures (IIs) design framework by Hanseth & Lyytinen (2010), which proved useful to manage in particular the "bootstrap problem" but also the "adaptability problem", and the inherent contradictions between them. In total there were 7 requirements divided into usage qualities (2), structural qualities (3) and management qualities (2). The Document Survey resulted in a comprehensive but messy model of the domain, expressed as a graph of triples that were categorised into themes and in turn into subdomains. These results informed the design of a questionnaire with competency questions in the Practitioner Survey, which produced a ranking of the identified subdomains and their perceived importance. Together the two surveys formed a funnel that turned written manuals of hundreds of pages into ranked competency questions.

The Design activity resulted in OntoRights in two versions, based on UFO and UFO-L. The latter is based on Robert Alexy's Theory of Constitutional Rights, a legal theory suited for analysing human rights problems. Two important properties of OntoRights originate in IIs theory. The first characteristic is the modularisation of OntoRights, and its integration with other ontologies and important data sources. The second property is that OntoRights consists of two versions. To pave the ground for long term evolution and survival, Full OntoRights opens possibilities for being used for system integration, AI and semantic web applications. Recall that OntoRights, with its users, forms an II or Complex Adaptive System (CAS), and a CAS that does not survive is not useful (McCarthy, 2003, p. 731). For the sake of initial usefulness, Simple OntoRights bends the rules of both UFO and OntoUML, and constitutes a bridge between Full OntoRigths and the models of case databases.

Two instantiations were done during the demonstration activity, showing that Simple OntoRights can rather easily be adapted according to the needs of a particular human rights group. Finally, an evaluation activity was also performed, including interviews with HURIDOCS staff and a practitioner.

7.3. Originality and Value

As discussed in 1.1. Problem, no formal ontology appears to have been designed before for the domain of human rights violations documentation. However, OntoRights can be compared with, on the one hand, existing legal ontologies, and on the other hand, existing available data models. Legal ontologies such as LKIF Core and UFO-L can also express the legal aspects of human rights problems. In particular UFO-L allows for expressing advanced combinations of duties, rights, powers, liberties commissions, and omissions (Griffo, 2018, Figure 1; Griffo et al., 2020), which can be

valuable for a more advanced legal analysis of human rights problems. Since OntoRights extends UFO-L, these more advanced features are inherent. However, as shown by the requirements, the domain of human rights violations documentation includes many other important aspects. UFO-L does not cover, for example, organisational structures, places, or information management, while OntoRights has dedicated modules for these aspects. Another major advantage of OntoRights is that it also includes Simple OntoRights. UFO-L, just as Full OntoRights, is much more difficult to instantiate for case databases.

Regarding available data models, the obvious contender is the model designed by HURIDOCS two decades ago, the so-called Events Standard (Dueck et al., 2001, p. 223/Appendix C). Compared to the event model, Simple OntoRights has a number of advantages. First, while the Events Standard is closer to a physical model, Simple OntoRights is closer to a conceptual model. Second, Simple OntoRights is presented as modules, which makes it easier to understand. As discussed in 6.2.2. Results, ease of use was a great concern of the interviewed participants. Third, while the Events Standard mainly can express "what happened?", Simple OntoRights can better represent "what are the human rights implications" and "how do we know this?". As mentioned, information management was highly rated in the Practitioner Survey and was mentioned in the evaluation. A fourth difference, which has both advantages and disadvantages, is that Simple OntoRights's recursive associations of the Event class enables an infinite level of detail. In contrast, the Events Standard makes a distinction between events and more granular acts. As argued by one of the participants in the evaluation, this distinction may be closer to how human rights groups think and talk about events.

The results of the evaluation suggest that human rights groups can arguably make good use of OntoRights in different ways, from applying most or all its modules with a few adaptations, to reuse of ontology patterns as described by Ruy et al. (2015, p. 174), to simply using it as a source of insight into some of the intricacies of modelling their domain. In other words, the stated problem of this thesis, that human rights groups lack formal ontologies to support their data modelling, has been considerably reduced.

However, even if Simple OntoRights arguably is easier to implement than HURIDOCS' Events Standard, it appears likely that it will still be too demanding for the human rights groups with the scarcest resources, at least not without assistance. On the other hand, human rights groups at the mid-range level are perhaps anyway those who do have the resources to develop a database beyond spreadsheets and off-the-shelf content management systems.

7.4. Ethical or Societal Consequence

The ethical considerations for the research process were discussed in 3.3. Research Ethics. The societal consequences of OntoRights will hopefully be that more human rights groups can better leverage their collected information and improve their internal workflows. In the socio-technical system of human rights reporting, information gathered by local and often resource-strained human rights groups can sometimes flow upwards all the way to the UN headquarters. The OntoRights can help the information arrive well-structured and granular. Ultimately, this should contribute to a world where human rights are increasingly respected, protected, and fulfilled.

7.5. Limitations and Research Quality

The work makes use of several data collection and analysis methods. The most important identified limitations include selection bias in the Practitioner Survey, and author bias.

Selection bias relates to sampling (Wilson, 2019, p. 41). Regarding the method application of the Practitioner Survey in 4.2.2. Functional Requirements, several points can be made. First, the mixing of two quite different sampling frames, snowballing and adding and excluding recipients for different practical reasons that was done in order to get an acceptable number of participants while also avoiding overloading HURIDOCS' practitioner network, implied a less coherent sampling strategy. Second, only 13 people submitted the questionnaire. Dencombe (2010, p. 46) strongly cautions against fewer than 30 people for representative samples, even for pragmatic approaches. This reduces the reliability of the research, as described by Denscombe (2010, p. 326). There are, however, extenuating circumstances to consider. The 13 persons that did answer the questionnaire had varying backgrounds in terms of geographic and thematic focus. Moreover, Hanseth & Lyytinen (2010, p. 8) argue that the first design rule for IIs is to identify and target a small user population. In the case of OntoRights, the small user population is the human rights groups that collaborate with HURIDOCS. In fact, the core of this user population is constituted by the very people who had enough motivation to participate in the survey.

Author bias relates to how the researcher affects an investigation (Wilson, 2019, p. 41). The author of this thesis has considerable experience in human rights monitoring and managing case databases. This has been an asset but can also make the results more dependent on the self of the researcher than would otherwise have been the case i.e. loss of internal reliability, as defined by Seale (1999). From the interpretation of the human rights manuals to the final edits of the finished OntoRights, a large number of often subtle choices had to be made that affected the outcome. This also affects the reproducibility of the research. On the other hand, the reproducibility was increased through providing online open licence access to material from the research process, e.g. coding spreadsheets from the Document Survey.

Another possible limitation is that the thesis used the content of manuals as a starting point for the functional requirements, i.e. a normative approach based on what ideally should be able to express in a case database. These manuals distil the collective knowledge of a large number of people with long experience in human rights monitoring, but could arguably run the risk of presenting a too idealised view of the field. This affects the credibility (validity) of the research (Denscombe, 2010, p. 299).

7.6. Future Research

This section will be approached from two directions. First, as a way to overcome the limitations of this study. Second, as possibilities to further explore Human Rights Ontology as a field.

To tackle the limitations, one possibility would be to also empirically investigate what human rights groups actually keep in their archives, including text files and spreadsheets. This would constitute a methodological, between-methods, triangulation, as described by Denscombe (2010, p. 346). After that OntoRights has hopefully been used by some human rights groups, a further evaluation could be done, but this time ex-post, artificial and formative, informing the design of OntoRights 2.0. Ideally, also other modellers could be involved, bringing experience and investigator triangulation, as described by Denscombe (2010, p. 347).

As to further explore Human Rights Ontology, OntoRights could be used for further research of the subdomains of monitoring and information management, but from the perspective of business process case management. Another path would be to make more use of the more sophisticated features of UFO-L, which were not explicitly included in OntoRights.

Related to the IIs adaptability problem (Hanseth & Lyytinen, 2010), OntoRights just like any formal ontology has the potential to be used for system integration, machine learning, and semantic web applications. One opportunity linked to the semantic web is that the OntoUML Visual Paradigm plugin supports export to gUFO (g as in gentle), which is an OWL lightweight implementation of UFO (Guizzardi et al., 2021b). This could be an entry point towards a human rights system that suffers less from the dispersed information problem identified by Alston & Gillespie (2012), and where the individual cases gathered by local human rights groups can be better recognized, aggregated and finally funnelled to the halls of power, as envisioned by Harrison et al. (2020).

Reference list

Afolabi, I. T., Sowunmi, O. Y., & Adigun, T. (2019). Semantic Text Mining using Domain Ontology. *Proceedings of the World Congress on Engineering and Computer Science 2019*. Retrieved 01 28, 2022, from http://www.iaeng.org/publication/WCECS2019/WCECS2019_pp309-314.pdf

Almeida, J. P. A., & Guizzardi, G. (2013). An ontological analysis of the notion of community in the RM-ODP enterprise language. *Computer Standards & Interfaces*, *35*(3), 257-268. 10.1016/j.csi.2012.01.007

Alston, P., & Gillespie, C. (2012). Global Human Rights Monitoring, New Technologies, and the Politics of Information. *European Journal of International Law*, *23*(4), 1089-1124. HeinOnline. https://doi.org/10.1093/ejil/chs073)

Announcing the sunset of human rights software Casebox and OpenEvsys. (2020, October 22). HURIDOCS. Retrieved February 9, 2022, from https://huridocs.org/2020/10/sunset-of-casebox-openevsys-to-expand-uwazi/

Apisakmontri, P., Nantajeewarawat, E., Ikeda, M., & Buranarach, M. (2016). An Ontology-based Framework for Semantic Reconciliation in Humanitarian Aid in Emergency Information Systems. *Journal of Information Processing*, *24*, 73-82. 10.2197/ipsjjip.24.73

Aronson, J. D., & Land, M. K. (2018). The Promise and Peril of Human Rights Technology (Introduction). In *New Technologies for Human Rights Law and Practice*. Cambridge University Press. 10.2139/ssrn.3310393

Ball, P. D. (1996). *Who Did what to Whom? Planning and Implementing a Large Scale Human Rights Data Project*. American Association for the Advancement of Science. https://hrdag.org/whodidwhattowhom/foreword.html

Bergamaschi, S., Guerra, F., & Leiba, B. (2010). Guest editors' introduction: Information overload. *IEEE Internet Computing*, *14*(6), 10-13. Retrieved 02 09, 2022, from https://ezp.sub.su.se/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edselc&AN=edselc.2-52.0-78149258342&site=eds-live&scope=site

Bitiukova, N. (2020). Journalistic Exemption under the European Data Protection Law. *SSRN Scholarly Paper*. Retrieved June 14, 2022, from https://papers.ssrn.com/abstract=3531977

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77-101. 10.1191/1478088706qp063oa

Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic Analysis. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences* (pp. 843-860). Springer. https://doi.org/10.1007/978-981-10-5251-4_103

Breuker, J., & Hoekstra, R. (2004). Epistemology and ontology in core ontologies: FOLaw and LRI-Core, two core ontologies for law. *Proceedings of EKAW Workshop on Core ontologies*.

Retrieved 02 05, 2022, from
https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.838.8366&rep=rep1&type=pdf

Brooks, J., McCluskey, S., Turley, E., & King, N. (2015). The Utility of Template Analysis in Qualitative Psychology Research. *Qualitative Research in Psychology*, *12*(2), 202-222. 10.1080/14780887.2014.955224

Cassese, A. (2012). A Plea for a Global Community Grounded in a Core of Human Rights. In A. Cassese (Ed.), *Realizing Utopia: The Future of International Law*. OUP Oxford. 10.1093/acprof:oso/9780199691661.001.0001

Data Modeling: Conceptual vs Logical vs Physical Data Model. (2018, 06 1). Visual Paradigm Online. Retrieved February 3, 2022, from https://online.visual-paradigm.com/knowledge/visual-modeling/conceptual-vs-logical-vs-phys ical-data-model/

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319-340. 10.2307/249008

Denscombe, M. (2010). *The Good Research Guide: For Small-scale Social Research Projects* (4th ed.). McGraw-Hill Education.

Dharmawan, M. T., Sukmana, H. T., Wardhani, L. K., Ichsani, Y., & Subchi, I. (2018). The Ontology of IT Service Management by Using ITILv.3 Framework: A Case Study for Incident Management. *2018 Third International Conference on Informatics and Computing (ICIC)*. 10.1109/IAC.2018.8780478

Djenouri, Y., Belhadi, H., Akli-Astouati, K., Cano, A., & Lin, J. C.-W. (2021). An ontology matching approach for semantic modeling: A case study in smart cities. *Computational Intelligence*. 10.1111/coin.12474

Dueck, J., Guzman, M., & Verstappen, B. (2001). *HURIDOCS Events Standard Format: A Tool for Documenting Human Rights Violations* (2nd ed.). HURIDOCS. Retrieved 02 12, 2022, from https://huridocs.org/resource-library/monitoring-and-documenting-human-rights-violations/ev ents-standard-formats/

El-Ghalayini, H., Odeh, M., & McClatchey, R. (2010). Developing ontology-driven conceptual data models. *Proceedings of the 1st International Conference on Intelligent Semantic Web-Services and Applications*.

El Ghosh, M., & Abdulrab, H. (2019). Towards a well-founded legal domain reference ontology by combining conceptual ontology patterns. *CEUR Workshop Proceedings*. Retrieved 02 11, 2022, from https://ezp.sub.su.se/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edsel c&AN=edselc.2-52.0-85077722772&site=eds-live&scope=site

Eriksson, O., Johannesson, P., & Bergholtz, M. (2018). Institutional ontology for conceptual modeling. *Journal of Information Technology*, *33*, 105-123. 10.1057/s41265- 018-0053-2

Falbo, R. d. A., Ruy, F. B., Guizzardi, G., Barcellos, M. P., & Almeida, J. P. A. (2014, 03 24). Towards an enterprise ontology pattern language. *Proceedings of the 29th Annual ACM Symposium on Applied Computing*. 10.1145/2554850.2554983

Fonseca, C., Prince Sales, T., & Viola, V. (2021, 12 14). *OntoUML Plugin for Visual Paradigm* [Software]. Retrieved 04 07, 2022, from https://github.com/OntoUML/ontouml-vp-plugin

Fowler, M., & Rice, D. (2003). *Patterns of Enterprise Application Architecture*. Addison-Wesley.

Gayathri, M., & R. Jagadeesh, K. (2020). Ontology based Concept Extraction and Classification of Ayurvedic Documents. *Procedia Computer Science*, *172*, 551-516. https://www.sciencedirect.com/science/article/pii/S1877050920313909

GeoNames. (n.d.). GeoNames. Retrieved June 21, 2022, from https://www.geonames.org/

Gregor, S., & Hevner, A. R. (2013). Positioning and Presenting Design Science Research for Maximum Impact. *MIS Quarterly*, *37*(2). Retrieved January 28, 2022, from https://www.jstor.org/stable/43825912

Griffo, C. (2018). *UFO-L: A Core Ontology of Legal Aspects Built on Legal Relations Perspective* (English translation) [PhD Thesis]. Technological Center, Computer Science Department, Federal University of Espírito Santo State. Retrieved 03 17, 2022, from https://drive.google.com/file/d/1yNktuYVhe0Lh7thOVLfSWg8ZQF18YAkF/

Griffo, C., Almeida, J. P. A., & Guizzardi, G. (2020). Legal Theories and Judicial Decision-Making: An Ontological Analysis. *Formal Ontology in Information Systems*. 10.3233/FAIA200661

Gruber, T., Liu, L., & Özsu, M. T. (2016). Ontology. In *Encyclopedia of Database Systems*. Springer. https://doi.org/10.1007/978-1-4899-7993-3_1318-2

Gruber, T. R. (1995). Toward principles for the design of ontologies used for knowledge sharing? *International Journal of Human-Computer Studies*, *43*(5-6), 907-928. https://doi.org/10.1006/ijhc.1995.1081

Guberek, T., & Romesh, R. (2014). *Human Rights and Technology: Mapping the Landscape to Support Grantmaking*. Ford Foundation. https://www.fordfoundation.org/work/learning/research-reports/human-rights-and-technology/

Guest, G., Namey, E., Chen, M., & Soundy, A. (2020). A simple method to assess and report thematic saturation in qualitative research. *PLOS ONE*, *15*(5). 10.1371/journal.pone.0232076

Guizzardi, G., Botti Benevides, A., Fonseca, C. M., Porello, D., Almeida, J. P. A., & Prince Sales, T. (2021a). UFO: Unified Foundational Ontology. *Applied Ontology*, *Preprint*(Preprint), 1-44. 10.3233/AO-210256

Guizzardi, G., Fonseca, C. M., Almeida, J. P. A., Sales, T. P., Benevides, A. B., & Porello, D. (2021b). Types and taxonomic structures in conceptual modeling: A novel ontological theory and engineering support. *Data & Knowledge Engineering*, *134*. 10.1016/j.datak.2021.101891

Guizzardi, G., Wagner, G., de Almeida Falbo, R., Guizzardi, R. S. S., & Almeida, J. P. A. (2013). Towards Ontological Foundations for the Conceptual Modeling of Events. *Conceptual Modeling*, 327-341. Springer Link. 10.1007/978-3-642-41924-9_27

Guizzardi, R. S., Carneiro, B. G., Porello, D., & Guizzardi, G. (2020). A Core Ontology on Decision Making. *ONTOBRAS*, 9-21. Retrieved May 3, 2022, from https://ris.utwente.nl/ws/portalfiles/portal/247752842/ceur.pdf

Hadjar, K. (2015). University Ontology: A Case Study at Ahlia University. In M. Workman (Ed.), *Semantic Web: Implications for Technologies and Business Practices*. Springer International Publishing. 10.1007/978-3-319-16658-2

Hajji, M., Qbadou, M., & Mansouri, K. (2019). Onto2DB: towards an eclipse plugin for automated database design from an ontology. *International Journal of Electrical and Computer Engineering (IJECE)*, *9*(4), 3298-3306. 10.11591/ijece.v9i4.pp3298-3306

Hanseth, O., & Lkyytinen, K. (2010). Design theory for dynamic complexity in information infrastructures: the case of building internet. *Journal of Information Technology*, *25*.

Harrison, J., Maynard, D., & Torsner, S. (2020). Strengthening the Monitoring of Violations against Journalists through an Events-Based Methodology. *Media and Communication*, *8*(1), 89-100. 10.17645/mac.v8i1.2543

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2017). Code Saturation Versus Meaning Saturation: How Many Interviews Are Enough? *Qualitative Health Research*, *27*(4), 591-608. 10.1177/1049732316665344

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). Design Science in Information Systems Research. *MIS Quarterly*, *28*(1), 75-105. 10.2307/25148625

Hoekstra, R., Breuker, J., Di Bello, M., & Boer, A. (2009). LKIF Core: Principled Ontology Development for the Legal Domain. In J. Breuker (Ed.), *Law, Ontologies and the Semantic Web: Channelling the Legal Information Flood*. IOS Press. https://www.amazon.co.uk/Law-Ontologies-Semantic-Web-Intelligence/dp/1586039423/ref=sr_1_1?keywords=9781586039424&linkCode=qs&qid=1644096336&s=books&sr=1-1

Human rights in customary international law. (n.d.). Find Legal Answers. Retrieved February 24, 2022, from https://legalanswers.sl.nsw.gov.au/international-human-rights-law/human-rights-customary-international-law

HURIDOCS. (2020, May 27). *"A small group of dedicated people are not to be underestimated in what they can achieve"*. HURIDOCS. Retrieved January 27, 2022, from https://huridocs.org/2020/05/google-dot-org-fellows-talk-collaboration-with-huridocs/

Hyland, I., & Schmidt, R. A. (2020). Protege-TS: An OWL Ontology Term Selection Tool. *33rd International Workshop on Description Logics (DL 2020)*. http://ceur-ws.org/Vol-2663/paper-12.pdf

Invernizzi-Accetti, C. (2018). Reconciling legal positivism and human rights: Hans Kelsen's argument from relativism. *Journal of Human Rights*, *17*(2), 215-228. 10.1080/14754835.2017.1332519

Johannesson, P., & Perjons, E. (2014). *An Introduction to Design Science*. Springer International Publishing.

Justice Watch Archive. (n.d.). Justice Watch Archive. Retrieved June 21, 2022, from https://cfjustice.uwazi.io/

Khan, Z. C., & Keet, C. M. (2015). An empirically-based framework for ontology modularisation. *Applied Ontology*, *10*(3-4), 171-195. 10.3233/AO-150151

Khantong, S., & Ahmad, M. N. (2020). An Ontology for Sharing and Managing Information in Disaster Response: In Flood Response Usage Scenarios. *Journal on Data Semantics: Concepts and Ideas for Building Knowledgeable Systems*, *9*(1). 10.1007/s13740-019-00110-6

Kulmanov, M., Smaili, F. Z., Gao, X., & Hoehndorf, R. (2021). Semantic similarity and machine learning with ontologies. *Briefings in Bioinformatics*, *22*(4). https://academic.oup.com/bib/article/22/4/bbaa199/5922325?login=true

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE Publications. https://archive.org/details/naturalisticinqu00linc

Manas, M., Gyrard, A., & Sheth, A. (2019). Empathi: An Ontology for Emergency Managing and Planning About Hazard Crisis. *2019 IEEE 13th International Conference on Semantic Computing (ICSC)*, 396-403. 10.1109/ICOSC.2019.8665539

Manual on human rights monitoring. (2011). OHCHR. Retrieved May 25, 2022, from https://searchlibrary.ohchr.org/record/4835

March, S. T., & Smith, G. F. (1995). Design and natural science research on information technology. *Decision Support Systems*, *15*(4), 251-266. 10.1016/0167-9236(94)00041-2

Mário de Oliveira Rodrigues, C., Bezerra, C., Freitas, F., & Oliveira, I. (2020). Handling Crimes of Omission by reconciling a criminal core ontology with UFO. *Applied Ontology*, *15*(1), 7-39. 10.3233/AO-200223

McCarthy, I. (2003). Technology management - A complex adaptive systems approach. *International Journal of Technology Management*, *25*(8), 728-745. 10.1504/IJTM.2003.003134

McDaniel, M., & Storey, V. C. (2019). Evaluating Domain Ontologies: Clarification, Classification, and Challenges. *ACM Computing Surveys*, *52*(4), 70:1–70:44. 10.1145/3329124

Moody, D. (2003). The Method Evaluation Model: A Theoretical Model for Validating Information Systems Design Methods. *ECIS 2003 Proceedings*.

Morgan, H. (2022). Conducting a Qualitative Document Analysis. *The Qualitative Report*, *27*(1), 64-77. 10.46743/2160-3715/2022.5044

Nemo. (n.d.). Ontology & Conceptual Modeling Research Group. Retrieved June 20, 2022, from https://nemo.inf.ufes.br/en/

Nguyen, V. (2011). *Ontologies and Information Systems: A Literature Survey*. Defence Science and Technology Organisation, Department of Defence, Australian Government. Retrieved 01 28, 2022, from https://apps.dtic.mil/sti/citations/ADA546186

Noy, N. (2004). Semantic integration : a survey of ontology-based approaches. *ACM SIGMOD Record*, *33*(4), 65-70. 10.1145/1041410.1041421

Noy, N., & Mcguinness, D. (2001). *Ontology Development 101: A Guide to Creating Your First Ontology*. Retrieved 02 01, 2022, from https://corais.org/sites/default/files/ontology_development_101_aguide_to_creating_your_first_ontology.pdf

Offermann, P., Blom, S., Schönherr, M., Bub, U., Winter, R., Zhao, J. L., & Aier, S. (2010). Artifact Types in Information Systems Design Science – A Literature Review. *Global Perspectives on Design Science Research*. 10.1007/978-3-642-13335-0_6

Okoli, C., & Schabram, K. (2010). A Guide to Conducting a Systematic Literature Review of Information Systems Research. *Sprouts: Working Papers on Information Systems*, *10*(26). 10.2139/ssrn.1954824

OntoUML specification. (2018). OntoUML specification — OntoUML specification documentation. Retrieved June 21, 2022, from https://ontouml.readthedocs.io/en/latest/index.html

ontouml-vp-plugin Issue 134. (2020, April 17). GitHub. Retrieved June 21, 2022, from https://github.com/OntoUML/ontouml-vp-plugin/issues/134

ontouml-vp-plugin Issue 135. (2020, April 17). GitHub. Retrieved June 21, 2022, from https://github.com/OntoUML/ontouml-vp-plugin/issues/135

An Overview of the Common Core Ontologies. (2019). CUBRC, Inc. Retrieved 02 11, 2022, from https://www.nist.gov/system/files/documents/2021/10/14/nist-ai-rfi-cubrc_inc_004.pdf

OWL Web Ontology Language Overview. (2004, February 10). W3C. Retrieved February 18, 2022, from https://www.w3.org/TR/owl-features/

Padma, P. (2020, October 3). *Why do we need Ontology in an AI or Data Science Framework?* Analytics Insight. Retrieved February 10, 2022, from https://www.analyticsinsight.net/need-ontology-ai-data-science-framework/

Peffers, K., Tuunanen, T., Rothenberger, M. A., & Chatterjee, S. (2007). A Design Science Research Methodology for Information Systems Research. *Journal of Management Information Systems*, *24*(3), 45-77. 10.2753/MIS0742-1222240302

Piracés, E. (2018). The Future of Human Rights Technology: A Practitioner's View. In M. K. Land & J. D. Aronson (Eds.), *New Technologies for Human Rights Law and Practice*. Cambridge University Press.

Poblet, M., & Kolieb, J. (2018). Responding to Human Rights Abuses in the Digital Era: New Tools, Old Challenges. *Stanford Journal of International Law, 54*(2), 259-284. https://ezp.sub.su.se/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=edshol&AN=edshol.hein.journals.stanit54.15&site=eds-live&scope=site

RDM Resources Data Management. (n.d.). Harvard Biomedical Data Management. Retrieved June 21, 2022, from https://datamanagement.hms.harvard.edu/about/what-research-data-management/rdm-resources

Reynolds, D. (2014, January 16). *The Organization Ontology*. W3C. Retrieved May 3, 2022, from https://www.w3.org/TR/vocab-org/

Rodrigues, C.m.d.o., Barreiros, E.f.s., de Almeida Filho, A.t., Freitas, F.l.g.d., & Azevedo, R.r.d. (2019). Legal ontologies over time: A systematic mapping study. *Expert Systems with Applications*, *130*, 12-30. 10.1016/j.eswa.2019.04.009

Ruy, F. B., Regianto, C. C., Santos, V. A., Falbo, R. A., & Guizzardi, G. (2015). Ontology Engineering by Combining Ontology Patterns. In P. Johannesson, M. L. Lee, S. W. Liddle, A. L. Opdahl, & Ó. Pastor López (Eds.), *Conceptual Modeling: 34th International Conference, ER 2015, Stockholm, Sweden, October 19-22, 2015, Proceedings* (pp. 173-186). Springer International Publishing. 10.1007/978-3-319-25264-3_13

Schweizer, C. (2021). *What is the Difference between Taxonomy and Ontology? It is a Matter of Complexity*. Earley Information Science. Retrieved February 20, 2022, from https://www.earley.com/insights/what-difference-between-taxonomy-and-ontology-it-matter-complexity

Seale, C. (1999). Reliability and Replicability. In *The Quality of Qualitative Research* (pp. 140-1). SAGE Publications. 10.4135/9780857020093

Singh, A., Gupta, A., & Peres, K. G. (2019). Writing Quantitative Research Studies. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences*. Springer Singapore. https://doi.org/10.1007/978-981-10-5251-4_117

Studer, R., Benjamins, R. V., & Fensel, D. (1998). Knowledge engineering: Principles and methods. *Data & Knowledge Engineering*, *25*(1), 161-197. 10.1016/S0169-023X(97)00056-6

Sunstein, C. R. (2006). *Infotopia: How Many Minds Produce Knowledge*. Oxford University Press. https://ebookcentral-proquest-com.ezp.sub.su.se/lib/sub/detail.action?docID=271677#

Trojahn, C., Vieira, R., Schmidt, D., Pease, A., & Guizzardi, G. (2021). Foundational ontologies meet ontology matching: A survey. *Semantic Web*. 10.3233/SW-210447

Tudorache, T., Nyulas, C., Noy, N., & Musen, M. (2011). WebProtégé: A Collaborative Ontology Editor and Knowledge Acquisition Tool for the Web. *Semantic Web*.

Ufes. (2017). Unified Foundational Ontology (UFO). Retrieved June 21, 2022, from https://dev.nemo.inf.ufes.br/seon/UFO.html

UFO-L. (n.d.). Nemo. Retrieved February 6, 2022, from https://nemo.inf.ufes.br/en/projetos/ufo-l/

UHRI. (n.d.). UHRI. Retrieved June 21, 2022, from https://uhri.ohchr.org/en/

Unified Foundational Ontology (UFO). (n.d.). UFO. Retrieved May 25, 2022, from https://dev.nemo.inf.ufes.br/seon/UFO.html

Universal Human Rights Index. (n.d.). Universal Human Rights Index - Human Rights Recommendations. Retrieved February 22, 2022, from https://uhri.ohchr.org/

UNSD — Methodology. (n.d.). UNSD — Methodology. Retrieved June 21, 2022, from https://unstats.un.org/unsd/methodology/m49/

Uschold, M., & Gruninger, M. (2004). Ontologies and semantics for seamless connectivity. *ACM SIGMOD Record*, *33*(4). doi.org/10.1145/1041410.1041420

van Aardt, A. (2005). Open Source Software Development as a Complex Adaptive System: Survival of the Fittest? *Journal of Applied Computing and Information Technology*, *9*(1). https://citrenz.ac.nz/conferences/2004/vanAardt.pdf

Verschuren, P. J.M. (2003). Case study as a research strategy: some ambiguities and opportunities. *International Journal Of Social Research Methodology*, *6*(2), 121-140.

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, *26*(2), xiii-xxiii. Retrieved 01d 31, 2022, from https://www.jstor.org/stable/4132319

WhoWasInCommand. (2022). Public database of police, military and other security and defence forces. Retrieved February 21, 2022, from https://whowasincommand.com/en/

Wilson, L. A. (2019). Quantitative Research. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences* (pp. 27-49). Springer Singapore. https://doi.org/10.1007/978-981-10-5251-4_54

Wimalasuriya, D. C. (2011). *Use of Ontologies in Information Extraction*. University of Oregon. Retrieved 01 28, 2022, from https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/11216/Wimalasuriya_Daya_C hinthana_phd2011wi.pdf

Woods, C. (2020). *Explaining Ontologies to Your Boss*. Ontologies Explained. Retrieved February 20, 2022, from https://ontology-explained.com/2020/explain-boss/

Wright, K. B. (2019). Web-Based Survey Methodology. In P. Liamputtong (Ed.), *Handbook of Research Methods in Health Social Sciences*. Springer Singapore. https://doi.org/10.1007/978-981-10-5251-4_18

Yang, L., Cormican, K., & Yu, M. (2019). Ontology-based systems engineering: A state-of-the-art review. *Computers in Industry*, *111*, 148-171. https://doi.org/10.1016/j.compind.2019.05.003

Yin, R.K. (1981). The Case Study as a Serious Research Strategy. *Knowledge*, *3*(1), 97-114. 10.1177/107554708100300106

Yin, R. K. (2009). *Case study research: design and methods* (4th ed.). SAGE Publications.

Youcef, B., Ahmad, M. N., & Mustapha, M. (2021). OntoPhaco: An Ontology for Virtual Reality Training in Ophthalmology Domain—A Case Study of Cataract Surgery. *IEEE Access*. 10.1109/ACCESS.2021.3126697

Annex I: Concept Matrix

Reference	Concept											
	Human Rights			Ontology								Design Theory
	Protection System	Practice	Technology	Definitions	Benefits	Types	Languages	Tools	Methodologies	Modularisation	Existing Relevant	Information Infrastructures
Announcing the Sunset, 2020			x								x	
Apisakmontri et al., 2016											x	
Aronson & Land, 2018	x	x	x									
Bergamaschi et al., 2010,					x							
Djenouri et al., 2021										x		
Dueck et al., 2001				x							x	
El Ghosh &						x						

Abdulrab, 2019												
El-Ghalayini et al., 2010					x							
Griffo et al., 2020						x					x	
Gruber et al., 2016				x								
Guberek & Silva, 2014			x									
Hajji et al., 2019					x							
Hanseth & Lyytinen, 2010												x
Harrison et al., 2020			x								x	
Hoekstra et al., 2009					x						x	
HURIDOCS, 2020			x									
Hyland & Schmidt, 2020										x		
Invernizzi-Accetti, 2018											x	

Khan & Keet (2015)										x		
Khantong & Ahmad, 2020											x	
Manual on Human Rights Monitoring, 2011	x	x										
Nguyen (2011)						x	x	x	x	x		
Noy & Mcguinness, 2001				x					x			
Piracés, 2018		x										
Poblet & Kolieb, 2018			x									
Rodrigues et al. (2019)											x	
Ruy et al., 2015									x			
Studer et al., 1998				x		x						
Tudorache et al., 2011								x				
UFO-L, n.d											x	

Universal Human Rights Index, n.d.										x	
Uschold & Gruninger, 2004,				x	x						
WhoWasInCommand, 2022										x	
Woods, 2020				x							
Yang et al. 2019				x							

Annex II: The Human Rights Data Life Cycle Framework

The figure below shows the stages of human rights reporting. It has been copied from Guberek & Silva (2014).

Figure 1.
Situating Technologies within Human Rights Work Processes, Objectives, Information and Methods

Stages in Human Rights Work	Objective	Examples of Data and Methods	Examples of Useful Technologies
Data collection and monitoring	Observe and capture direct and indirect evidence of human rights events	State documents, victims and witness testimonies and interviews, third-party accounts, survey data, photos and video, press info, forensic data, satellite data, exhumation reports, mined data, found data, social media data	Data capture applications on mobile phones and computers, video, crowdsourcing applications, social media, remote sensing, forensic technologies
Organizing and managing data	Create repositories of information and archives, manage cases, structure data	Principles of data curation, archiving, meta-data, coding and tagging, information retrieval	Local or web-based data repositories, relational databases for highly-structured information, search engines, tagging, scanning
Analysis and interpretation	Draw meanings and conclusions based on available information: • qualitative and quantitative analysis • individual stories and sets of data • retrospective and predictive • descriptive and inferential	Social-scientific empirical methods, verification, aggregation, data visualization, statistical modeling, triangulation, contrasting sources, situating within historical, political and social contexts	Analysis software and programming languages, applications for data transformations and visualizations

Communications and strategic use of evidence	May include: • informing mass or specific audiences • advocacy • diplomacy • use of evidence in courts or commissions • calls for mobilization and action	Journalism, media communications, alerts, reports, presentations.	Reporting via traditional media: websites, blogs, social media sites and other online forums. Email, text messages, video, audio, television
Data security: across all stages of the data lifecycle	Freedom of expression, information, right to privacy, and security of people and information	Legal and normative protections, secure technological infrastructure, privacy enhancing tools, such as encryption	Encryption (SSL, end to-end on data transmission, local privacy-enhancing technologies) circumvention tools, back-ups, servers, mirroring

Annex III: Practitioner Survey Questionnaire

The questionnaire for the practitioner was designed in English and translated to Spanish. They are inserted on the following pages. Both are eight pages long.

Hello,

Thank you for considering participating in this survey!

The purpose of this survey is to understand what aspects of human rights violations documentation that human rights practitioners such as yourself think are the most important to be able to express in a case database of human rights violations.

The survey is part of a master thesis research project of information systems at Stockholm University, and is done in collaboration with HURIDOCS. Read more about the project here: https://joranl.github.io/human-rights-ontology/.

A selected few of the participants will in April/May 2022 be offered to provide additional information about their organisation's work and requirements. In return, they will get a proposal for a custom designed data model.

The questionnaire consists of four parts.

1. Informed consent. This part explains who will have access to your information. You will be asked to give your consent to participating.

2. Background information about you and your organisation. You can choose to be anonymous or give your contact details.

3. Importance of areas of human rights violations documentation. Imagine that your organisation (or other organisation that you are familiar with) was to design a new case database. What kind of areas, concepts, and relations would you want it to be able to express? How important are they?

4. Final comments (optional).

Completing the survey should take around 10-20 minutes.

Thank you so much for your participation!

Jöran Lindeberg
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+46 70 6016136 (Signal, Telegram, WhatsApp)

Part 1

Informed consent

In addition to the information provided on the previous page, please note that the participation in this survey is completely optional.

The collected information will be stored safely and only be available to:

- The researcher (Jöran Lindeberg)
- A limited set of staff from Stockholm University
- HURIDOCS

You can choose if you want to disclose their identity in the questionnaire or be anonymous. Also, if you do disclose your identity, you can withdraw your consent at any time. In any case, the published information will be anonymized before publication. In other words, no details will be published that can lead to the identification of participants or their organisations. The collected information will be handled in accordance with GDPR (General Data Protection Regulation).

1. I confirm that I have read and agreed to this information.
◉ Yes
○ No

Part 2

Background information

2. What kind of experience do you have of human rights violations documentation? (More than one alternative can be checked)

☐ Field work, e.g. interviewing victims, perpetrators, and witnesses
☐ Managing information from field work in a database
☐ Resarch using databases as sources
☐ Participate in designing human rights databases
☐ Other experience
☐ No experience

3. How many years have you worked with human rights violations documentation?

○ 0-1
○ 2-4
○ 5-9
○ 10 or more

4. How many people are working for your current (or last) employer?

○ 0-5
○ 6-9
○ 10-29
○ 30-99
○ 100 or more

5. In what parts of the world does this organisation work with human rights violations documentation? (More than one alternative can be checked)

☐ Asia (except for Middle East)
☐ Europe
☐ Latin America and the Caribbean
☐ Northern Africa and Middle East
☐ Northern America
☐ Oceania
☐ Sub-Saharan Africa

6. Which thematic issues in human rights are most important for you? For example, persons deprived of liberty, or human rights defenders. (Optional)

[   ]

Identity (optional)

This questionnaire is anonymous by default, but you can choose to also provide contact details for yourself and/or your organisation. This makes it easier to interpret the information. The contact details will not be made public.

7. Your name

[   ]

8. Your organisation

[   ]

9. Country

[   ]

How do contact you (optional)

If you are interested in having a proposal for a custom designed data model developed for you, please also enter how to contact you.

10. Email

[   ]

11. Phone number (ex +46 123 456 789)

[   ]

12. Preferred communication channels

☐ Email
☐ Email with PGP encryption
☐ Signal
☐ Telegram
☐ WhatsApp

Part 3

Needs for documentation in a case database

This is the main part of the questionnaire.

Please imagine that your organisation (or other organisation that you are familiar with) was to design a new case database. Below, a number of areas of human rights violations documentation will be presented to you. Please indicate how important it is that your imagined database will be able to express the respective types of information.

13. ROLES AND PEOPLE.

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... ROLES of the people that participated in an event (possible human rights violation)? For example, victims, witnesses, perpetrators.	○	○	○	○	○	○
... types of RESPONSABILITY in a human rights violation, in other words differentiate between commission and omission?	○	○	○	○	○	○
... types of INVOLVEMENT in an event? For example, carried out the act, planned the act, was superior in the chain of command.	○	○	○	○	○	○
... how people were AFFECTED by an action? For example, in case of negative effect, was the harm physical, psychological, reputational or economical?	○	○	○	○	○	○
... CHARACTERISTICS of people? For example: sex, gender identity, age, ethnicity, employment, group affiliation, etc.	○	○	○	○	○	○

14. RELATIONS BETWEEN EVENTS.

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... how events can be the ROOT CAUSES of other events? For example, a conflict about the right to territory generates protests, which are met by excessive force.	○	○	○	○	○	○
... how an event consists of SUB-EVENTS with different levels of detail? For example, a manifestation with 500 participants was attacked. Some participants are identified, others not. A group of 10 people were also shot at, of which 3 were wounded.	○	○	○	○	○	○

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15. INTERVENTIONS (REMEDY BY THE STATE).

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... INTERVENTIONS (remedy) by state authorities after a human rights violation has occurred. For example, were the perpetrators arrested, did the victims receive some kind of compensation?	○	○	○	○	○	○
... OBJECTIVES of an intervention? For example, was the stated objective: truth, justice, reparation and/or guarantees of non-recurrence?	○	○	○	○	○	○
... IMPACT of an intervention? For example, was the result positive, negative, or neutral?	○	○	○	○	○	○

16. HUMAN RIGHTS PROTECTION SYSTEM.

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... which NORMS (human rights standards) an event violated? For example, that illegal surveillance violates the right to privacy?	○	○	○	○	○	○
... which HUMAN RIGHTS INSTRUMENTS that contain the standards that an event violated? For example, the rights to privacy as expressed in article 12 in the Universal Declaration of Human Rights.	○	○	○	○	○	○
... if an event constitutes a LEGALLY DEFINED human rights violation? For example, enforced disappearance, torture, or extrajudicial killing.	○	○	○	○	○	○
... ELEMENTS of a legally defined human rights violation? For example, one element of torture as a legal concept is that it inflicts severe pain or suffering.	○	○	○	○	○	○

17. MONITORING PROCESS.

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... actions you took to INVESTIGATE (find out the facts of) a human rights violation? For example, did you interview the victim?	○	○	○	○	○	○
... actions you took to INTERVENE (improve the situation) after a human rights violation? For example, did you meet with an authority to make recommendations?	○	○	○	○	○	○

18. INFORMATION MANAGEMENT.

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... SOURCES of information? For example, when and how a particular document was received.	○	○	○	○	○	○
... the ORIGNAL SOURCE of a piece of information?	○	○	○	○	○	○
... CONFIDENTIALITY levels of documents and individual pieces of information.	○	○	○	○	○	○
... details from INTERVIEWS? For example, who did you talk with, what did they tell you, and what informed consent was given?	○	○	○	○	○	○

19. ORGANISATIONAL STRUCTURES, INFLUENCE, AND RISK

How important is it that your database can express ...

	Very Important	Important	Moderately important	Of little importance	Unimportant	Don't know
... the structure of HIERARCHICAL ORGANISATIONS, such as a company or state authority? In other words how a person or unit is part of a larger unit.	○	○	○	○	○	○
... how more LOOSE ORGANISATIONAL STRUCTURES are formed? For example, networks, supply chains, shareholdings.	○	○	○	○	○	○
... how an ACTOR INFLUENCES other actors? For example, a State that gives financial support to another state normally has some influence.	○	○	○	○	○	○
... how NORMS that are part of traditions, policies and regulations INFLUENCE a situation? For example, a substandard environmental protection law.	○	○	○	○	○	○
... the FACTORS, both positive and negative, that affect the RISKS a person or group is facing.	○	○	○	○	○	○

20. In questions 13-19 you have been answering questions related to different areas of human rights violations documentation. Please rank these areas in order of importance. (1 is the most important, 7 is the least important)

	1	2	3	4	5	6	7
ROLES AND PEOPLE	○	○	○	○	○	○	○
RELATIONS BETWEEN EVENTS	○	○	○	○	○	○	○
INTERVENTIONS (REMEDY BY THE STATE)	○	○	○	○	○	○	○
HUMAN RIGHTS PROTECTION SYSTEM	○	○	○	○	○	○	○
MONITORING PROCESS	○	○	○	○	○	○	○
INFORMATION MANAGEMENT	○	○	○	○	○	○	○
ORGANISATIONAL STRUCTURES, INFLUENCE, AND RISK	○	○	○	○	○	○	○

Part 4.

Final comments (optional)

21. This is the end of the questionnaire. If you have any comments, please write them here.

Thank you so much for participating!

Reciba un cordial saludo,

En primer lugar, ¡muchas gracias por considerar participar en este cuestionario!

El propósito del siguiente cuestionario es entender los aspectos de la documentación de violaciones de derechos humanos que profesionales como usted consideran como más importantes a expresar en una base de datos sobre violaciones de derechos humanos.

El cuestionario hace parte de una tesis de maestría sobre sistemas de información en la Universidad de Estocolmo, y es llevado a cabo en colaboración con HURIDOCS. En el siguiente enlace se puede leer más sobre el proyecto (en inglés): https://joranl.github.io/human-rights-ontology/. (Una versión traducida al español automáticamente se puede consultar aquí)

Una selección de las y los participantes en abril/mayo serán invitados a proveer información adicional sobre sus organizaciones y sus requerimientos. A cambio de ello, recibirán una propuesta para un modelo conceptual de datos, diseñado según sus necesidades.
El cuestionario consiste en cuatro partes:

1. Consentimiento informado. Esta parte explica quienes tendrán acceso a su información. Usted tendrá que dar su consentimiento para participar.

2. Información de contexto sobre usted y su organización. Se puede escoger entre participar de manera anónima o identificarse.

3. Importancia de diferentes áreas en la documentación de violaciones de derechos humanos. Imagínese que su organización (u otra organización que conozca) diseñaría una base de datos para manejar casos de violaciones. ¿Qué tipo de áreas, conceptos y relaciones sería importante poder expresar? ¿Qué tan importantes son?

4. Comentarios finales (opcional).

Completar la encuesta durará aproximadamente 10-20 minutos.

¡Mil gracias de antemano por su participación!

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Parte 1

Consentimiento informado

Además de la información destacada en la página anterior, favor tener en cuenta que la participación en el presente cuestionario es completamente voluntaria.

Los datos recolectados se guardarán de forma segura, y solamente serán accesibles para:

- El investigador (Jöran Lindeberg)
- Un grupo limitado de empleados de la Universidad de Estocolmo
- HURIDOCS

Se puede escoger entre revelar su identidad o participar de manera anónima. En caso de revelar su identidad, el consentimiento puede ser retirado en cualquier momento. De todos modos, la información será anonimizada antes de publicarla. En otras palabras, ningún dato que pueda permitir la identificación de cualquier participante será publicado. Adicionalmente, la información recolectada será manejada según lo que estipula el Reglamento General de Protección de Datos (RGPD, o GDPR por sus siglas en inglés).

1. Confirmo que he leído y aprobado la información.

- ◉ Si
- ○ No

Parte 2

Información de contexto

2. ¿Qué tipo de experiencia tiene usted respecto a documentación de violaciones de derechos humanos? (Varias alternativas pueden ser marcadas)

☐ Trabajo de campo, por ejemplo entrevistando a víctimas, victimarios, y testigos
☐ Manejando información de trabajo de campo en una base de datos
☐ Realizando investigaciones usando bases de datos como fuente
☐ Participando en diseño de bases de datos sobre derechos humanos
☐ Otro tipo de experiencia
☐ Ningúna experiencia

3. ¿Cuántos años ha trabajado usted con documentación de violaciones de derechos humanos?

○ 0-1
○ 2-4
○ 5-9
○ 10 o más

4. ¿Cuántas personas hay trabajando con su actual empleador (o el último)?

○ 0-5
○ 6-9
○ 10-29
○ 30-99
○ 100 o más

5. ¿En qué partes del mundo trabaja esa organización con documentación de violaciones de derechos humanos? (Varias alternativas pueden ser marcadas)

☐ Asia (excepto el Medio Oriente)
☐ Europa
☐ América Latina y el Caribe
☐ África del Norte y el Oriente Medio
☐ América del Norte
☐ Oceania
☐ África Subsahariana

6. ¿Cuáles temas respecto a derechos humanos son los más importantes para usted? Por ejemplo, personas privadas de libertad, o defensoras/defensores de derechos humanos. (Opcional)

[   ]

Identidad (opcional)
El punto de partida es que este cuestionario es anónimo, pero usted puede decidir revelar también la identidad de usted y su organización, lo cual facilita la interpretación de la información.

7. Su nombre

[   ]

8. Su organización

[   ]

9. País

[   ]

Cómo comunicarse (opcional)

Si le interesa obtener una propuesta para un modelo conceptual de datos, diseñado según sus necesidades, favor ingresar también sus datos de contacto.

10. Correo electrónico

[   ]

11. Número de teléfono (ex +46 123 456 789)

[   ]

12. Canales de comunicación preferidos

☐ Correo electrónico
☐ Correo electrónico encriptado con PGP
☐ Signal
☐ Telegram
☐ WhatsApp

Part 3

Necesidades de documentación de casos en una base de datos de violaciones de derechos humanos

Está parte del cuestionario es la mayor.

Abajo, diferentes áreas de documentación de violaciones de derechos humanos serán presentadas. Ahora, imagínese que su organización (u otra organización que conozca) diseñaría una base de datos para manejar casos de violaciones. Favor indicar el nivel de importancia para cada área.

13. ROLES Y PERSONAS

¿Qué tan importante es que su base de datos pueda expresar ...

	Muy importante	Importante	Moderadamente importante	Poco importante	Nada importante	No sé
... los ROLES de las personas que participaron en un evento (posible violación de derechos humanos)? Por ejemplo, víctimas, testigos, victimarios.	○	○	○	○	○	○
... tipos de RESPONSABILIDAD respecto a una violación de derechos humanos, en otras palabras diferenciar entre comisión y omisión?	○	○	○	○	○	○
... tipos de INVOLUCRAMIENTO en un evento? Por ejemplo, ejecutar una acción, planificar una acción, ser superior en la línea de mando.	○	○	○	○	○	○
... cómo las personas fueron AFECTADAS por una acción? Por ejemplo, en caso de impacto negativo, si el daño fue físico, psicológico, reputacional, o económico.	○	○	○	○	○	○
... CARACTERÍSTICAS de las personas. Por ejemplo, sexo, identidad de género, edad, afiliación a grupo, etc	○	○	○	○	○	○

14. RELACIONES ENTRE EVENTOS

¿Qué tan importante es que su base de datos pueda expresar ...

	Muy importante	Importante	Moderadamente importante	Poco importante	Nada importante	No sé
... cómo unos eventos pueden ser causa raíz de otros eventos? Por ejemplo, un conflicto sobre el derecho al territorio genera protestas que son enfrentadas con uso de fuerza excesiva.	○	○	○	○	○	○
... cómo un evento consiste en SUB-EVENTOS con diferentes niveles de detalles? Por ejemplo, una manifestación con 500 participantes fue atacada. Algunos participantes son identificados, otros no. Un grupo de 10 participantes además fueron objeto de disparos, y 3 de ellos resultaron heridos.	○	○	○	○	○	○

15. INTERVENCIONES (ACTUACIÓN DEL ESTADO)

¿Qué tan importante es que su base de datos pueda expresar …

	Muy importante	Importante	Moderadamente importante	Poco importante	Nada importante	No sé
… INTERVENCIONES (acciones por autoridades del estado) tras una violacion de derechos humanos? Por ejemplo, si los victimarios fueron capturados, si la víctima recibió algún tipo de reparación.	○	○	○	○	○	○
… los OBJETIVOS de una intervención? Por ejemplo, si el objetivo fue verdad, justicia, reparación y/o garantías de no-repetición.	○	○	○	○	○	○
… el IMPACTO de una intervención? Por ejemplo, si los resultados fueron positivos, negativos, o neutrales.	○	○	○	○	○	○

16. SISTEMA DE PROTECCIÓN DE LOS DERECHOS HUMANOS

¿Qué tan importante es que su base de datos pueda expresar …

	Muy importante	Importante	Moderadamente importante	Poco importante	Nada importante	No sé
… cuáles NORMAS (estándares de derechos humanos) fueron violados en un evento? Por ejemplo, que la vigilancia ilegal viola el derecho a la privacidad.	○	○	○	○	○	○
… qué INSTRUMENTOS de derechos humanos contienen los estándares que un evento violó? Por ejemplo, el derecho a la privacidad tal como es expresado en el artículo 12 en la Declaración Universal de Derechos Humanos.	○	○	○	○	○	○
… si un evento constituye una violación de derechos humanos TIPIFICADA? Por ejemplo, desaparición forzada, tortura, ejecución extrajudicial.	○	○	○	○	○	○
… los ELEMENTOS de una violación de derechos humanos tipoficada. Por ejemplo, un elemento de tortura como un concepto legal es que causa un dolor o sufrimiento severo.	○	○	○	○	○	○

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17. PROCESO DE MONITOREO (OBSERVACIÓN)

¿Qué tan importante es que su base de datos pueda expresar ...

	Muy importante	Importante	Moderadamente importante	Poco importante	Nada importante	No sé
... acciones que ustedes tomaron para INVESTIGAR (averiguar los hechos sobre) una violación de derechos humanos. Por ejemplo, ¿se entrevistó a la víctima?	○	○	○	○	○	○
... acciones que ustedes tomaron para INTERVENIR (mejorar la situación) tras una violación de derechos humanos? Por ejemplo, si se reunió con alguna autoridad para hacer recomendaciones?	○	○	○	○	○	○

18. GESTIÓN DE INFORMACIÓN

¿Qué tan importante es que su base de datos pueda expresar ...

	Muy importante	Importante	Moderadamente importante	Poco importante	Nada importante	No sé
... FUENTES de información? Por ejemplo, cuándo y cómo se recibió un documento particular.	○	○	○	○	○	○
... la FUENTE ORIGINAL de una información?	○	○	○	○	○	○
... niveles de CONFIDENCIALIDAD respecto a documentos e informaciones?	○	○	○	○	○	○
... detalles de una ENTREVISTA? Por ejemplo, ¿con quién se habló, qué dijeron, qué tipo de consentimiento informado se dió?	○	○	○	○	○	○

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19. ESTRUCTURAS ORGANIZATIVAS, INFLUENCIA, Y RIESGOS

¿Qué tan importante es que su base de datos pueda expresar …

	Muy importante	Importante	Moderadamente importante	Poco important	Nada importante	No sé
… la estructura de ORGANIZACIONES JERÁRQUICAS, como una empresa o autoridad del estado? En otras palabras, como una persona o unidad hace parte de otra unidad mayor.	○	○	○	○	○	○
… la estructura de ORGANIZACIONES MENOS FIRMES, como redes, cadenas de suministro, propiedad de acciones?	○	○	○	○	○	○
… cómo un ACTOR INFLUYE a otros actores? Por ejemplo, un estado que brinda apoyo financiero a otro estado normalmente tiene algo de influencia.	○	○	○	○	○	○
… cómo NORMAS que hacen partes de tradiciones, políticas y regulaciones INFLUYEN una situación? Por ejemplo, una ley de protección del medio ambiente deficiente.	○	○	○	○	○	○
… los FACTORES, tanto positivos y negativos, que afectan los RIESGOS que una persona o un grupo sufre.	○	○	○	○	○	○

20. En las preguntas 13-19 usted ha contestado preguntas respecto a las diferentes áreas de documentación de violaciones de derechos humanos. Favor rankear dichas áreas según orden de importancia. (1 es el más importante, 7 es el menos importante.)

	1	2	3	4	5	6	7
ROLES Y PERSONAS	○	○	○	○	○	○	○
RELACIONES ENTRE EVENTOS	○	○	○	○	○	○	○
INTERVENCIONES (ACTUACIÓN DEL ESTADO)	○	○	○	○	○	○	○
SISTEMA DE PROTECCIÓN DE LOS DERECHOS HUMANOS	○	○	○	○	○	○	○
PROCESO DE MONITOREO (OBSERVACIÓN)	○	○	○	○	○	○	○
GESTIÓN DE INFORMACIÓN	○	○	○	○	○	○	○
ESTRUCTURAS ORGANIZATIVAS, INFLUENCIA, Y RIESGOS	○	○	○	○	○	○	○

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Parte 4.

Comentarios finales (opcional)

21. Usted ha llegado al final del cuestionario. Si tiene algún comentario, por favor hágalo aquí.

¡Mil gracias por su participación!

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Annex IV: Practitioner Survey and Competence Questions Results

The column "Weighted mean …" was calculated by adding the number of responses that indicated "Very Important" or "Important" for each question in a subdomain, and then dividing by the number of questions in that subdomain (high number equals to high importance). The column "Calculated Total Ranking" was calculated by, first, identifying which subdomain had received the highest number of "1". Second, by identifying which subdomain had received the highest number of "1" plus "2", Third, etc (low number equals to high importance).

No.	Subdomain	Competency Question (How important is it that your database can express …)	Number of 'Very Important' + 'Important'	Median	Mode	Weighted mean of Number of 'Very Important' + 'Important'	Calcu-lated Total Ranking	Covered by Full OntoRights	Covered by Simple OntoRights
13	Roles And People					11.6	1		
13a	Roles And People	… ROLES of the people that participated in an event (possible human rights violation)? For example, victims, witnesses, perpetrators.	13	Very Important	Very Important			yes	yes
13b	Roles And People	… types of RESPONSIBILITY in a human rights violation, in other words differentiate between commission and omission?	9	Important	Very Important			yes	yes

13c	Roles And People	… types of INVOLVEMENT in an event? For example, carried out the act, planned the act, was superior in the chain of command.	11	Important	Important			yes	yes
13d	Roles And People	… how people were AFFECTED by an action? For example, in case of negative effect, was the harm physical, psychological, reputational or economical?	13	Very Important	Very Important			yes	yes
13e	Roles And People	… CHARACTERISTICS of people? For example: sex, gender identity, age, ethnicity, employment, group affiliation, etc.	12	Very Important	Very Important			yes	yes
14a	Relations Between Events					7.0	5		
14a	Relations Between Events	… how events can be the ROOT CAUSES of other events? For example, a conflict about the right to territory generates protests, which are met by excessive force.	9	Important	Very Important			yes	yes
14b	Relations Between Events	… how an event consists of SUB-EVENTS with different levels of detail? For example, a manifestation with 500 participants was attacked. Some participants are identified, others not. A group of 10 people were also shot at, of which 3 were wounded.	7	Important	Moderately important			yes	yes
15	Interventions (Remedy by the State)					9.3	6		

15a	Interventions (Remedy by the State)	… INTERVENTIONS (remedy) by state authorities after a human rights violation has occurred. For example, were the perpetrators arrested, did the victims receive some kind of compensation?	10	Important	Very Important			yes	yes
15b	Interventions (Remedy by the State)	… OBJECTIVES of an intervention? For example, was the stated objective: truth, justice, reparation and/or guarantees of non-recurrence?	9	Important	Very Important			yes	yes
15c	Interventions (Remedy by the State)	… IMPACT of an intervention? For example, was the result positive, negative, or neutral?	9	Important	Very Important			yes	yes
16	Human Rights Protection System					10.8	4		
16a	Human Rights Protection System	… which NORMS (human rights standards) an event violated? For example, that illegal surveillance violates the right to privacy?	12	Very Important	Very Important			yes	yes
16b	Human Rights Protection System	… which HUMAN RIGHTS INSTRUMENTS that contain the standards that an event violated? For example, the rights to privacy as expressed in article 12 in the Universal Declaration of Human Rights.	10	Very important	Very Important			yes	partly
16c	Human Rights Protection System	… if an event constitutes a LEGALLY DEFINED human rights violation? For example, enforced disappearance, torture, or extrajudicial killing.	11	Very important	Very Important			yes	yes
16d	Human Rights Protection System	… ELEMENTS of a legally defined human rights violation? For example, one element of torture as a legal concept is that it inflicts severe pain or suffering.	10	Important	Important			yes	no

17	Monitoring Process					9.5	3		
17a	Monitoring Process	… actions you took to INVESTIGATE (find out the facts of) a human rights violation? For example, did you interview the victim?	10	Very importa nt	Very Importa nt			yes	yes
17b	Monitoring Process	… actions you took to INTERVENE (improve the situation) after a human rights violation? For example, did you meet with an authority to make recommendations?	9	Importa nt	Very Importa nt			yes	yes
18	Information Management					12.5	2		
18a	Information Management	… SOURCES of information? For example, when and how a particular document was received.	12	Very Importa nt	Very Importa nt			yes	yes
18b	Information Management	… the ORIGINAL SOURCE of a piece of information?	13	Very Importa nt	Very Importa nt			partly	partly
18c	Information Management	… CONFIDENTIALITY levels of documents and individual pieces of information.	13	Very Importa nt	Very Importa nt			yes	yes
18d	Information Management	… details from INTERVIEWS? For example, who did you talk with, what did they tell you, and what informed consent was given?	12	Very Importa nt	Very Importa nt			yes	yes

19	Organisational Structures, Influence, and Risk						6.8	7		
19a	Organisational Structures, Influence, and Risk	… the structure of HIERARCHICAL ORGANISATIONS, such as a company or state authority? In other words how a person or unit is part of a larger unit.	7	Important	Moderately important			yes	partly
19b	Organisational Structures, Influence, and Risk	… how more LOOSE ORGANISATIONAL STRUCTURES are formed? For example, networks, supply chains, shareholdings.	4	Moderately important	Moderately important			yes	yes
19c	Organisational Structures, Influence, and Risk	… how an ACTOR INFLUENCES other actors? For example, a State that gives financial support to another state normally has some influence.	7	Important	Very Important			yes	yes
19d	Organisational Structures, Influence, and Risk	… how NORMS that are part of traditions, policies and regulations INFLUENCE a situation? For example, a substandard environmental protection law.	8	Important	Important			yes	no
19e	Organisational Structures, Influence, and Risk	… the FACTORS, both positive and negative, that affect the RISKS a person or group is facing.	8	Important	Important			no	no

Annex V: Manual for instantiating Simple OntoRights

The purpose of this manual is to facilitate for human rights practitioners who want to adapt the human rights ontology OntoRights to a conceptual model tailored to the needs of a specific organisation. HURIDOCS' community resource "Plan for the information you need"[25] explains more about the benefits of databases and basics of conceptual modelling

Simple OntoRights can be accessed[26] as a local website.

Section 1-3 is repeating the most essential information from the master thesis that led to the design of OntoRights. For a full understanding, it is of course better to read the complete thesis, or at least 5. The Artefact.

About Simple OntoRights

The purpose of a OntoRights is twofold:

1. To have a well-founded and comprehensive conceptual model (ontology), in which parts can be reused.
2. To facilitate integration between databases.

The OntoRights builds on Unified Foundational Ontology (UFO), and some of its core ontologies, most prominently UFO-L (L as in Legal). Thereby, it reuses well-founded and widely used patterns. However, the full version of OntoRights (Full OntoRights) is rather complex, which limits its usefulness for modelling concrete databases for human rights groups with often limited resources. Therefore, OntoRights also exists in a simplified version (Simple OntoRights) that is much closer to the structure of a relational database.

Delimitations of the Manual

The manual does not cover how to identify your needs and important concepts. This can be done by for example following HURIDOCS' community resource until step 4.1.[27]

The manual does not cover how to implement a conceptual model into a physical data model[28] (including for example how to handle sub-classes, assign foreign keys, and so-called association tables to handle many-to-many relations). Nor does in address general systems management challenges such as data migration, user access privileges, or management of information security and privacy.

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[25] https://huridocs.org/community-resources/designing-your-conceptual-data-model/
[26] https://joranl.github.io/human-rights-ontology/vp-projects/Simple_OntoRights_v1_0/
[27] "Step 1: Identify your entities (or entity types)" https://huridocs.org/community-resources/designing-your-conceptual-data-model/
[28] https://online.visual-paradigm.com/knowledge/visual-modeling/conceptual-vs-logical-vs-physical-data-model/

How Simple OntoRights Was Designed

In short, the following steps were taken to design OntoRights:

1. Initial discussions with HURIDOCS and a literature review.

2. A document survey of the content of parts of the OHCHR Human Rights Monitoring Manual and HURIDOCS' Events Standard format, in order to get a comprehensive view of the relevant concepts and corresponding relations. More than 500 concepts were identified.

3. The document survey was analysed in order to group the concept info subdomains.

4. This was the base for a questionnaire to human rights practitioners, with the aim of understanding the importance of the different subdomains and so-called competency questions.

5. During the design of OntoRights, an effort was made to reuse existing ontologies. Also reference data from for example the Universal Human Rights Index and HURIDOCS Microthesauri was reused. Since most human rights groups will probably only need parts of OntoRights, it was designed in modules.

6. Another aspect of reuse is that some of the suggested attributes for Simple OntoRights are URLs to important external databases, such as Geonames[29] or WhoWasinCommand[30].

7. OntoRights was designed and published with OntoUML Visual Paradigm Plugin.[31]

How to Interpret Simple OntoRights

It is expected that the reader of this manual has a basic understanding of UML class diagrams. Otherwise, a short introduction[32] is needed.

Note that the connection between from Simple OntoRights to Full OntoRights is represented with so-called stereotypes within "<>" and that the connection to OntoUML, the ontology modelling language that bridges UML and UFO, is represented stereotyped within "<<>>". Both these stereotypes can be ignored in classes as well as associations.

A particular aspect of UFO is that **material** relations is mediated by a **relator** class, which may appear redundant.

The modules of Simple OntoRights consist of nine ordinary modules and an annex with data types and enumerations (lists). Module 1 of human rights violations can be considered the core module.

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[29] https://www.geonames.org/
[30] https://whowasincommand.com
[31] https://github.com/OntoUML/ontouml-vp-plugin; https://www.visual-paradigm.com/download/community.jsp
[32] See for example
https://www.visual-paradigm.com/guide/uml-unified-modeling-language/uml-class-diagram-tutorial/ (The part about Operations is redundant since OntoRights does not contain any)

The modules are in fact different diagrams of the same model. Some classes appear in more than one module. Each class is explained in the module with its so-called master view (marked with an "M" or nothing, as opposed to an "a").

Below, each class is explained. For someone that has already read Part V of the thesis, parts of the information will be repeated. The attributes will normally not be explained, but worth considering for better understanding. Some attributes have as values data types and enumerations that can be found in the Simple OntoRights Annex diagram. Note that some attributes are not self-explanatory (but on the other hand not essential) since they have to do with the relation to Full OntoRights.

Module 1: Human Rights Violation

This module can be considered the core module.

While **Event** expresses what happened in a certain situation, **Human Rights Violation** expresses the legal human rights implications of an Event. (Read more about Event in Module 2).

A Human Rights Violation always must include at least one **Perpetrator** and at least one **Victim**, who in turn are **Agents**, either persons or some kind of collective (see agentType). A Human Rights Violation can be a case of **Legally Defined Human Rights Violation** e.g. torture or enforced disappearance, which have specific definitions. A Human Rights Violations normally concerns one or more **Human Rights Standard** and/or **Human Rights Instrument**. A Human Rights Standard is normally described in a Human Rights Instrument.

Events and their properties, including any associated Human Rights Violation, are clarified through a **Monitoring Process**.

Module 2: Actions and Consequences

This module is for expressing what happened, in other words "who did what to whom" (on a material level, as opposed to the human rights implications expressed in Module 1).

An **Event** is often part of a larger Event. One or many Events can cause one or many Events. An Event is performed by exactly one **Agent**. An Event can have **Consequence For Agent**.

This structure allows and encourages events to be expressed on a very detailed level. For instance, if a police officer fires a teargas grenade against a group of five people, this can be represented as one event that directly causes five resulting events when people inhale the smoke. They are all part of one larger event. If this level of detail is not needed, the group can for example be expressed as a collective instead of five individuals, or perhaps just the firing of the grenade could be registered. In this case, the resulting events can be omitted, but the first event can still be associated with Consequence for Agent.

An Event may be important enough to have its **Consequence For Agent** represented. An intentional Event can also have Consequence For Agent as an intentend effect.

Finally, an Event happens in a **Place**.

Note for adjustments: You could consider making this module less complex (but also less expressive) by removing the intended effect association. If you want to express types of roles of Agents in Events, this can be done with the intendedRole and actualRole attributes in Event, complemented with intended and actual Consequence For Agent.

Module 3: Agents and Memberships

An **Agent** is either a **Person** or a **Organisation Or Group**, i.e any kind of collective. A Person can be a **Member** and have **Membership** of an Organisation Or Group. Any Agent can be active in one or more **Place**, and a person is also born in a Place. A Person can have a great number of different **Person Relationship** to other Persons (it is not called "personal relationship" to convey that it can also be for example work relations). Finally, Human Rights Mechanism is a type of **Organisation Or Group**.

Module 4: Organisations and Networks

An **Organisation Or Group** can be part or a larger Organisation Or Group. For example, an organisational unit is part of another organisational unit, which is part of a state authority, which is part of the Kingdom of Sweden.

Any type of **Agent** can have different types of **Network Connection** to other Agents.

An Organisation Or Group can have, for example own or manage, a **Site**, such as an office or a prison.

Module 5: Places

A **Place** is usually part of one or more larger Places. For example, Paris is part of France, and Russia is part of both Europe and Asia. A particular type of Place is a **Site**, which is for example an apartment, building, or complex of building, usually with a specific purpose, for example to function as a **Detention Centre**. An **Event** or **Situation** happens within a **Place**.

Module 6: Detention Centres

A **Site** can function as a **Detention Centre**. Within a Detention Centre, a number of Detainment Conditions can exist (for example, in different sections). Both **Detained Person** and **Detained Group** can be held in a Detention Centre. (All groups are of course composed by persons, but it is sometimes more practical to register whole groups as detained.

Note that Module 2 may be better to use to express concrete abusive events against a person or group.

Note for adjustments: If you do not have to represent detained collectives (Organisation Or Group), the complexity of this module can be reduced significantly by excluding Organisation Or Group, Detained Group, Agent, Membership, and Member, and then also changing the **affects** association from Agent to Detained Person.

Module 7: Human Rights Protection System

The contents of this module was partly explained in Module 1.

A **Human Rights Instrument** can be part of another Human Rights Instrument. For example, Article 1 of the Universal Declaration of Human Rights is part of the Universal Declaration of Human Rights, and the Universal Declaration of Human Rights is part of the International Bill of Human Rights.

A **Legally Defined Human Rights Violation** is defined by a number of Human Rights Instruments and/or **Human Rights Standards**.

The mandate of a **Human Rights Mechanism** is defined by a Human Rights Instrument.

Module 8: Monitoring and Information Management

When a human rights group becomes interested in one or many related **Event**, a human rights staff person will open a **Monitoring Process** (can also be called a case file) and register what is known about the Event. However, the knowledge about what happened is acquired through **Monitoring Events**. Like any Event, A Monitoring Event can be decomposed into sub-events for increased granularity.

A Monitoring Event occurs within a **Place**, and involves one or many **Monitoring Event Participants**, which must have a **participantRole**, for example witness, victim or alleged perpetrator. A Monitoring Event Participant is always a Person, that in the context of that event can represent an **Organisation Or Group.**

The Monitoring Event has as a **confidentiality** attribute, that depends both on the informedConsent that was obtained, and the estimation done by the monitoring staff person (see also the Confidentiality Management data type in Simple OntoRights Annex). Note that the Monitoring Event does not contain the actual information that was acquired. The actual information is registered as one or more Information Piece. One reason is that different **Information Pieces** may be assigned different confidentiality levels. Also, while the confidentiality attribute of a Monitoring Event refers to that the event at all happened, the confidentiality attribute of an Information Piece refers to actual information that was obtained.

The content of an Information Piece may be written as a string value of the **description** attribute, but may also exist as a digital file, that was for example received as an attachment to a message.

Note for adjustments: Just like any other Events, Monitoring Events can in real life have intended and real **Consequences For Agent** (see Module 2). Therefore, it would be logical to represent Monitoring Event as a subclass of Event. This would better express how the monitoring of a human rights group shares common aspects with any other event that affects a situation. However, mixing the actions of the human rights group with the actions of others can also be complex, which is why this possibility was discarded.

Module 9: Legal Process

An **Official Legal Process**, such as a criminal investigation, may have negative as well as positive consequences for someone.

An Official Legal Process can be associated with another Official Legal Process. For example, a

police investigation may result in a court case. An Official Legal Process is composed of **Official Legal Records**, that in turn are created by an **Event**, issued by an **Agent**, may have content that refers to an Agent, and is part of a **Consequence For Agent**.

Note for adjustments: This module can be seen as a submodule of Module 2, but can also stand alone, including only Official Legal Record, Official Legal Process, and Legal Process Relation.

How to Adapt Simple OntoRights to a Tailored Conceptual Data Model

1. Study the diagram of each module and read about them in the section above for better understanding.
2. Decide the tool you will use. Most efficient is probably to open the Simple OntoRights project[33] with the above-mentioned Plugin for Visual Paradigm. Another tool that is easy to use is Diagrams.net.[34]
3. Select the modules that contain your identified concepts.
4. Consider if there are classes in the selected modules that you do not need. If so, exclude them. Note that in some situations you might have to redesign the module slightly after excluding a class.
5. Adapt the multiplicity between classes if needed.
6. Adapt the attributes according to your needs. Note that some of the enumerations visible in the Simple OntoRights Annex diagram contain links to HURIDOCS Microthesauri reference data, and that the Microthesauri[35] contain even more useful datasets.
7. Now you should have your conceptual model.

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[33] https://github.com/JoranL/human-rights-ontology/blob/gh-pages/vp-projects/220530_Simple_OntoRights.vpp
[34] https://www.diagrams.net/ (also known as Draw.io).
[35] https://huridocs.org/resource-library/monitoring-and-documenting-human-rights-violations/microthesauri/

Annex VI: Questionnaire for instantiations

April 2022

Introduction

The purpose of this questionnaire is to gather information from organisations that have volunteered to have example conceptual data models designed for them as part of the master thesis about Human Rights Ontology by Jöran Lindeberg, student of information systems, Stockholm University.[36]

The participants have already submitted the questionnaire that was used for eliciting the requirements of the Human Rights Ontology.[37] A draft ontology has now been designed, and will be demonstrated through using it to design example conceptual data models for organisations that are interested in developing a new case database for human rights violations.

The questions can be answered either in writing and sent to Jöran Lindeberg (contact details below), or during a conference call in which the thesis author takes notes.

Informed consent

Please note that the participation in this questionnaire (regarding example conceptual models) is completely optional. You can withdraw your consent at any time.

The collected information will be stored safely and only be available to:

- The researcher (Jöran Lindeberg)
- A limited set of staff from Stockholm University
- HURIDOCS

The published information will be anonymized before publication. In other words, no details will be published that can lead to the identification of participants or their organisations (unless they have explicitly stated otherwise). The collected information will be handled in accordance with GDPR (General Data Protection Regulation).

If you agree to participate, please send a message to Jöran Lindeberg (contact details below) in which you write for example: "I confirm that I have read and understood the provided information about this study, give my consent to collect information as described". Please also copy-paste the complete "Informed consent" section above in the end of your message, to show exactly the information that you have received and agree to.

Jöran Lindeberg

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[36] https://joranl.github.io/human-rights-ontology/
[37] https://survey.su.se/human-rights-documentation/en

joran.lindeberg@pm.me
+46 70 6016136 (Signal, Telegram, WhatsApp)

Questions

Your name:
Your organisation:
Country:

1.
What would be the purpose of the database?

Thematic focus?

Is it an internal or public database?

2.
How would you like to be able to filter or browse the cases?

3.
Any other particular features that your database should ideally have

4.
Please explain and/or link to concrete examples of cases and types of knowledge that you would like to manage in the database.

5.
What kind of users will input information?

6.
What kind of users will search for information?

7.
A conceptual model is only one step out of many towards a working database. In order to make the example model as useful as possible, it can be adjusted according to the organisation's practical limitations.

How would the proposed example model likely be implemented? For instance, must a free content management system (CMS) like WordPress, or could resources exist for a more tailored solution?

8.
Any other practical limitations that could be relevant to know?

Annex VII: Script for Evaluation Interview

May 2022
Jöran Lindeberg

Introduction

The purpose of this interview is to evaluate the simplified version of the Human Rights Ontology (Simple OntoRights) and its accompanying Manual for how to make use of Simple OntoRights to facilitate conceptual modelling of a case database of human rights violations.

The Human Rights Ontology is developed by Jöran Lindeberg, student of information systems, Stockholm University as part of a master thesis project.1

Before the interview, the participants will have studied Simple OntoRights (published from Visual Paradigm as a local website, and the Manual (as an Annex in the draft thesis).

Informed consent

Please note that the participation in this evaluation interview (regarding Simple OntoRights and its Manual) is completely optional. You can withdraw your consent at any time.

The collected information will be stored safely and only be available to:

- The researcher (Jöran Lindeberg)
- A limited set of staff from Stockholm University
- HURIDOCS

The published information will be anonymized before publication. In other words, no details will be published that can lead to the identification of participants or their organisations (unless they have explicitly stated otherwise). The collected information will be handled in accordance with GDPR (General Data Protection Regulation).

If you agree to participate, please send a message to Jöran Lindeberg (contact details below) in which you write for example: "I confirm that I have read and understood the provided information about this study, and give my consent to collect information as described". Please also copy-paste the complete "Informed consent" section above in the end of your message, to show exactly the information that you have received and agree to.

Jöran Lindeberg
joran.lindeberg@pm.me
+46 70 6016136 (Signal, Telegram, WhatsApp)

Questions

Contact Details
Name:
Organisation:
Email:
Phone Number:

Background Questions

I. Have you earlier done the Participant Survey?2

II. How much time do you use to study the Simple OntoRights ontology and the Manual?

III. What prior experience do you have of developing databases, in particular of conceptual modelling?

Evaluation Questions

Imagine that you are about to design a conceptual data model for a human rights group that needs a case database to document violations of human rights. You have already done analysis of your needs, in other words what type of information that your database needs to contain, including important concepts. You are about to develop the conceptual data model, in other words make a diagram that:

I. Shows the concepts (also called classes)
II. How the concepts relate to each other, including:

a) If a concept is a type of (subclass)a more general concept. For instance, that a Child is a subclass of Person
b) How a concept relates to other concepts. For instance, that a Person was born in a Place, but may also have lived in many Places.

III. The most relevant attributes of a concept. For instance, that a Person has a height.

Now, also imagine that you used the Simple OntoRights and the included Manual for this task.

Perceived Usefulness

Question 1. Do you think that using the Simple OntoRights and the included Manual would make this task quicker?

Question 2. Do you think that using the Simple OntoRights and the included Manual would improve the result of this task?

Question 3. What do you think would be the greatest **benefits** or **challenges** for a human rights group that decided to use Simple OntoRights and the included Manual?

Question 4. Overall, how useful do you think that Simple OntoRights and the included Manual would be for this task?

Perceived Ease of Use

Question 5. Looking at the diagrams and reading the Manual, how understandable was it?

Did the division into different modules (diagrams) make sense?

Was it clear what different concepts (classes, in boxes) represented?

Was it clear what different associations (arrows between boxes) represented?

Question 6. Can you think of any particular aspects of the Simple OntoRights and the included Manual that makes it **easy** or **difficult** to use?

Question 7. Overall, how **easy** or **difficult** do you think it would be to use the Simple OntoRights and its included Manual?

Customizability

Question 8. Human rights groups can have many different needs, since they, for instance, cover different issues, and have different resources. To which degree do you think that Simple OntoRights can be adapted to these specific needs?

Modularity

Question 9. Do you think that the division into modules (different diagrams) makes it easier to adapt Simple OntoRights?

Completeness

Question 10. To what degree do you think that Simple OntoRights covers the most important areas of human rights violations documentation?

The Demonstration Case

Question 11. Then reading about the invented demonstration case Harassment Stop, and looking at the proposed conceptual model for this organisation, what were your thoughts?

Intention to Use

Question 12. The next time **you** need to develop a conceptual model for a case database of human rights violations, how likely is it that **you would use** Simple OntoRights and its included Manual?

Why/Why not?

Question 13. The next time **another human rights** group needs to develop a conceptual model for a case database of human rights violations, how likely is it that **you would recommend** Simple OntoRights and its included Manual?

Why/Why not?

Closing

Question 14. Do you have any final comments or questions?